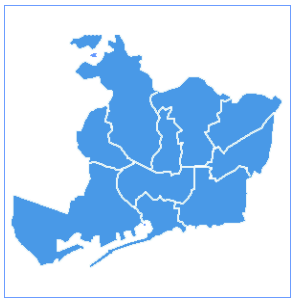

THE EVOLUTION AND DISTRIBUTION OF SECOND-HAND HOUSE PRICES IN BARCELONA

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Business and Administration
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INTRODUCTION

The municipal districts are the largest territorial unit within the city Barcelona. The current territorial organization, dating from 1984, is divided into ten administrative districts, which in turn are subdivided into a total of 73 neighborhoods; these areas are within 233 basic statistics, which are ultimately disaggregated into census tracts from 1061.

The aim of this study is to collect and analyze variables that could have a relationship with the second-hand house prices in Barcelona, as much disaggregated as possible from 2008 to 2011 and make a statistical analysis. The subdivision of the data is based on the information we found in the Open data service of the Barcelona city and we found that was more convenient the subdivision by neighborhoods. Referring to the years, 2007 was the first year to start the study, but due to the lack of data on the web pages mentioned we decided to limit the dates 2008 to 2011.

The study consists of two parts. The first part is the preliminary study of the data and the second part is the econometric analysis of the data to see if there is any relationship between the second-hand house prices and the variables chosen. In the first part, I calculated the means, medians, mode, standard deviation, minimums and maximums and made a Box-and-Whisker Plot of each of the explanatory variables and I observe the evolution of the data in the time series. In the second part of the econometric study we made a dispersion graph for all exogenous variables, the correlation matrix, and we looked for the best model where we could see if the variables were significant. With this information, we calculated the elasticity and partial derivative. Finally, we looked at if there was any atypical observation and if the model presented multicollinearity. With all this information, we extract some conclusions and then, we analyzed more deeply the information.

FIRST PART:
THE DATA ANALYSIS

At the beginning, we started collecting as much dates per neighborhood as possible but then we started to choose the ones that had data from 2008 to 2011. This way, we could see the evolution of each of the variables and make conclusions.

As an initial idea, we wanted to find some variables that could explain the variation of the endogenous variable, in this case, the second-hand house prices as an estimated selling price (annual series of average selling second-hand house prices). The variables exogenous are five; percentage of income, average occupation, commercialprice, (we took the estimated monthly rent price of commercial locals because the number of observations is clearly higher compared to the estimated selling price), nationality of foreigners (we decided to group them in a block so as to avoid the presence of multicollinearity) and the amount of houses in each neighborhood.

In this part, we are going to analyze the data making a descriptive study where we are going to focus on the neighborhoods that stand out from the others and a time series to see the evolution of the exogenous variables.

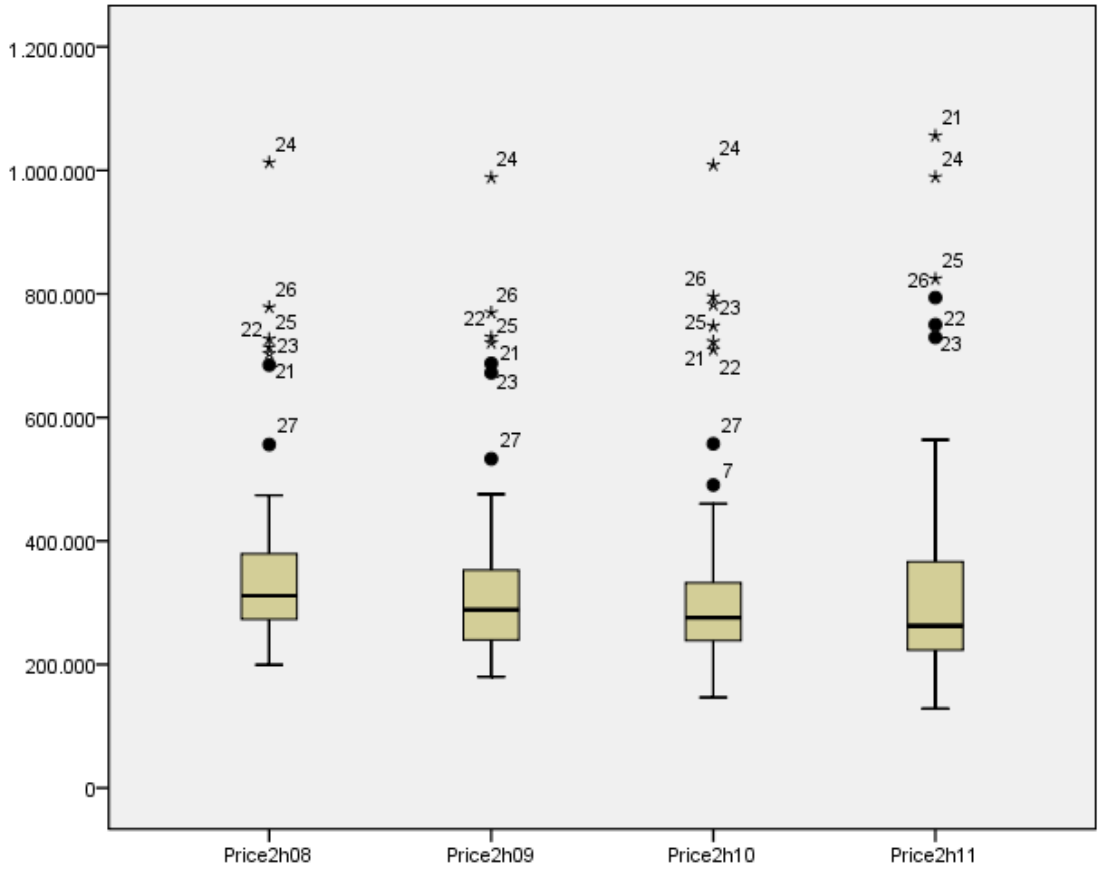
DESCRIPTIVE STUDY

Second-hand house prices

Statistics

		price2h08	price2h09	price2h10	price2h11
N	Valid	69	69	69	69
	Missing	4	4	4	4
Mean		358673,12	334087,06	327985,8406	329447,3597
Median		311343,00	288585,00	275918,0000	262528,7761
Mode		199357[a]	179913[a]	146733,00[a]	128492,31[a]
Std. Deviation		149311,126	154894,473	1,67991E5	1,90900E5
Minimum		199357	179913	146733,00	128492,31
Maximum		1012598	988339	1008620,00	1055776,16

a. Multiple modes exist. The smallest value is shown

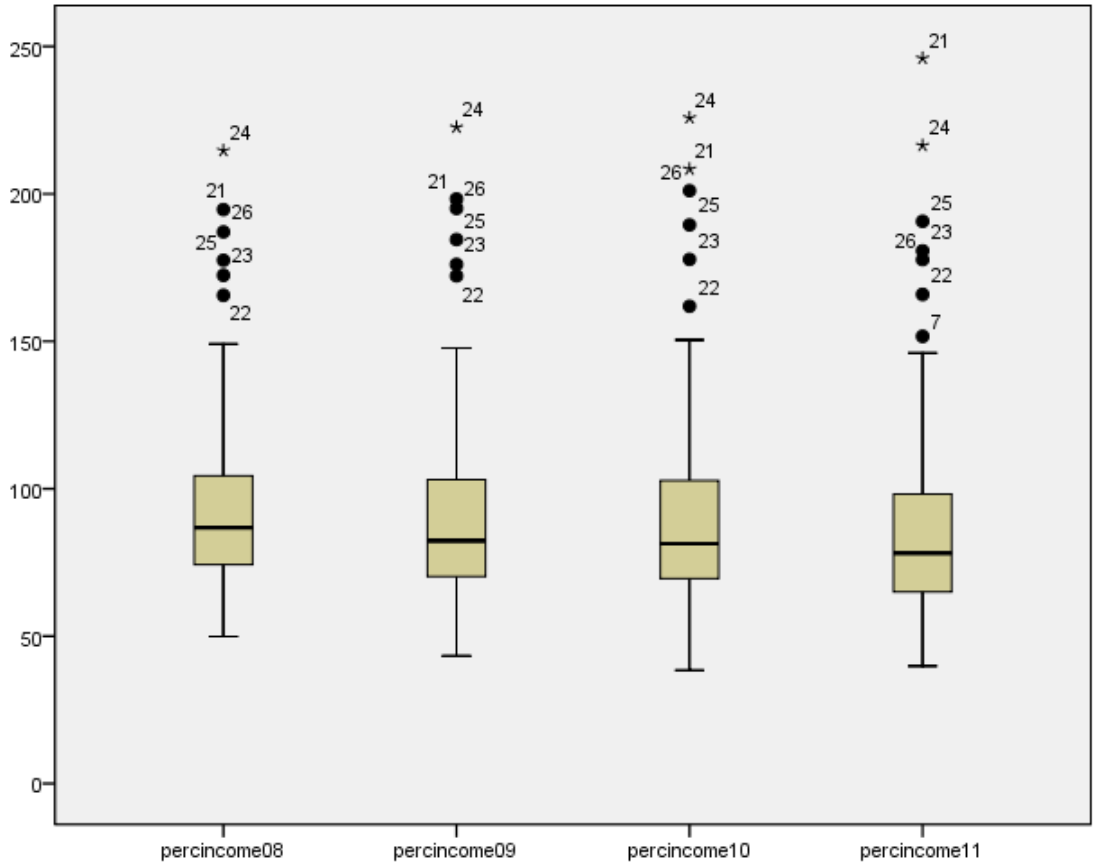


Percentage of income

Statistics

		percincome08	percincome09	percincome10	percincome11
N	Valid	73	73	73	73
	Missing	0	0	0	0
Mean		95,3274	93,7233	91,5918	90,4863
Median		86,8000	82,4000	81,4000	78,2000
Mode		80,80[a]	82,10	81,40	65,00[a]
Std. Deviation		34,36894	37,18819	39,15855	40,26727
Minimum		49,90	43,30	38,40	39,90
Maximum		214,70	222,60	225,80	246,00

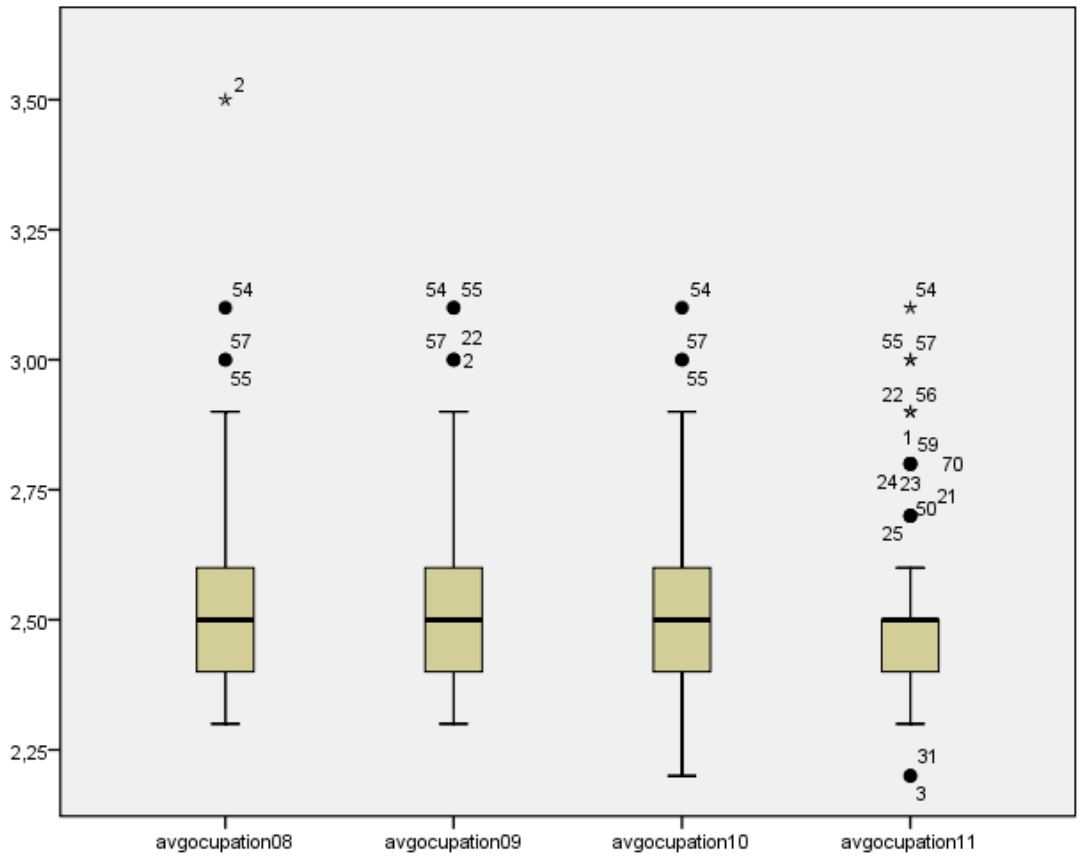
a. Multiple modes exist. The smallest value is shown



Average occupation

Statistics

		avgoccupation08	avgoccupation09	avgoccupation10	avgoccupation11
N	Valid	73	73	73	73
	Missing	0	0	0	0
Mean		2,5562	2,5562	2,5247	2,5068
Median		2,5000	2,5000	2,5000	2,5000
Mode		2,50	2,50	2,50	2,40
Std. Deviation		,20949	,19148	,18392	,18434
Minimum		2,30	2,30	2,20	2,20
Maximum		3,50	3,10	3,10	3,10

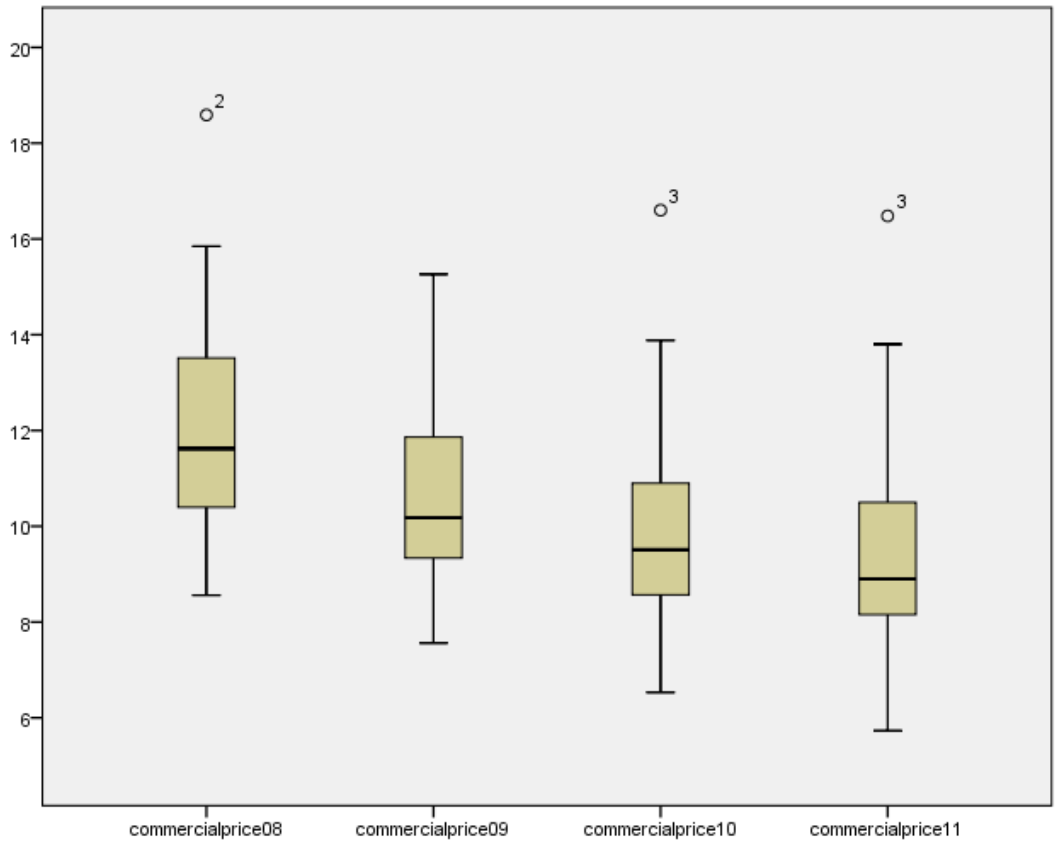


Rent price of commercial locals

Statistics

		commercialprice08	commercialprice09	commercialprice10	commercialprice11
N	Valid	56	60	69	57
	Missing	17	13	4	16
Mean		12,0763	10,6130	9,6197	9,3198
Median		11,6050	10,0850	8,9800	8,8700
Mode		12,43	7,56[a]	8,63[a]	7,64[a]
Std. Deviation		2,27733	1,92100	1,93902	1,99888
Minimum		8,56	7,56	6,18	5,73
Maximum		18,59	15,26	16,60	16,48

a. Multiple modes exist. The smallest value is shown

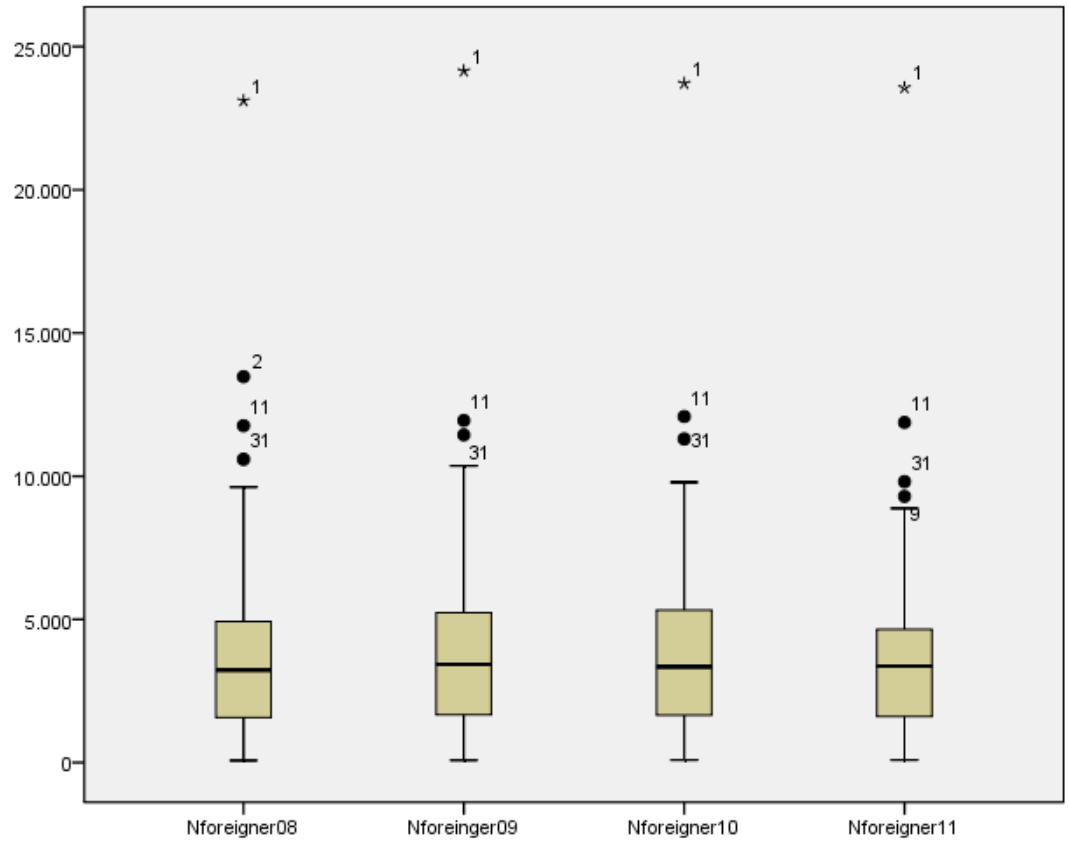


Number of foreigners

Statistics

		Nforeigner08	Nforeinger09	Nforeigner10	Nforeigner11
N	Valid	73	73	73	73
	Missing	0	0	0	0
Mean		3989,7123	4121,3973	4044,7534	3831,8904
Median		3234,0000	3433,0000	3343,0000	3368,0000
Mode		1576,00	81,00[a]	89,00[a]	3815,00
Std. Deviation		3697,83700	3747,30809	3664,77170	3519,71998
Minimum		76,00	81,00	89,00	86,00
Maximum		23113,00	24150,00	23718,00	23566,00

a. Multiple modes exist. The smallest value is shown

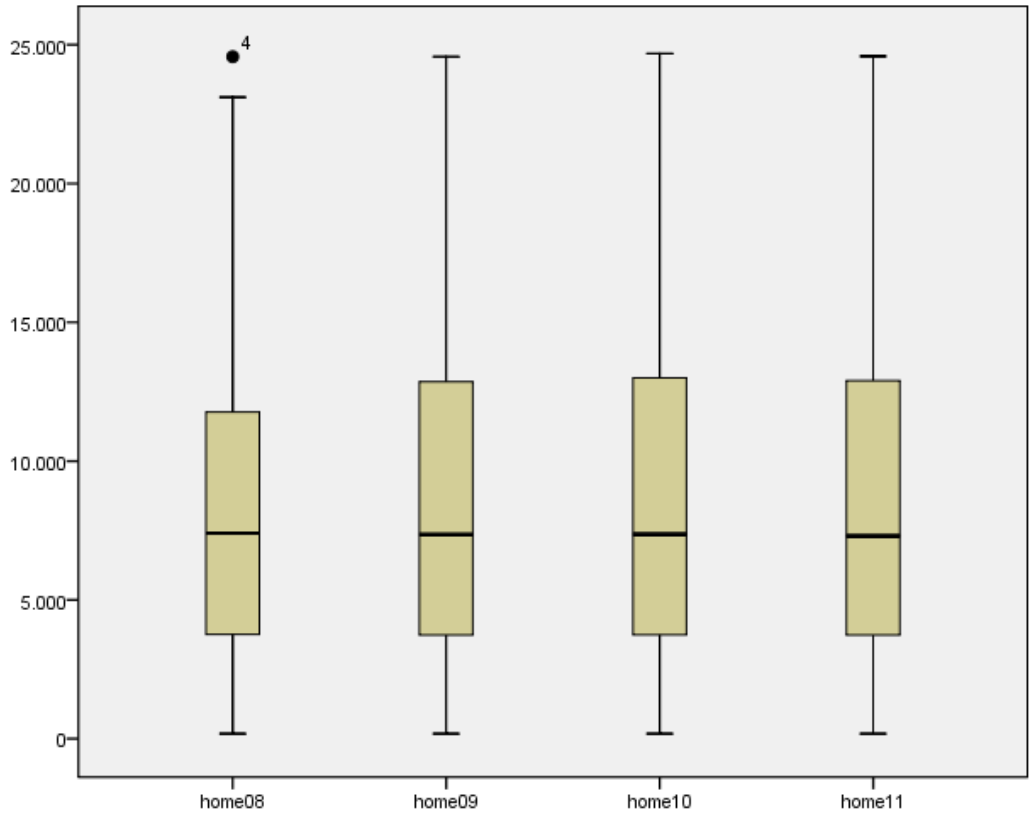


Number of homes

Statistics

		home08	home09	home10	home11
N	Valid	68	73	73	73
	Missing	5	0	0	0
Mean		8759,5147	8973,5479	9020,9041	9003,8082
Median		7406,0000	7618,0000	7781,0000	7823,0000
Mode		4147,00	184,00[a]	183,00[a]	182,00[a]
Std. Deviation		6231,01940	6141,15699	6169,42631	6149,59085
Minimum		183,00	184,00	183,00	182,00
Maximum		24569,00	24570,00	24684,00	24582,00

a. Multiple modes exist. The smallest value is shown



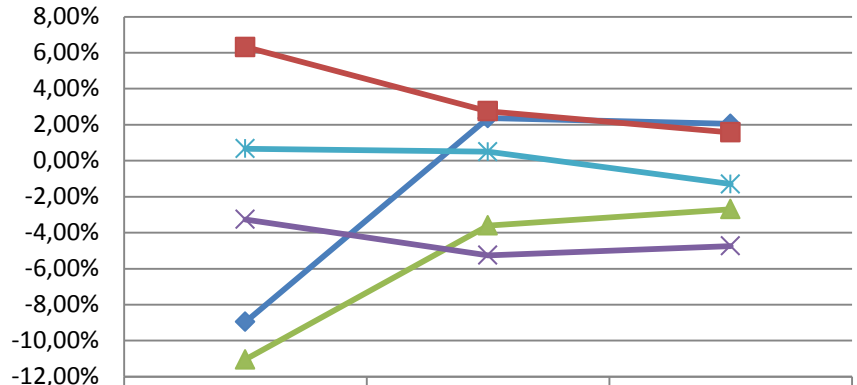
In the Box-and-Whisker Plot of the second-hand house prices we can see that Pedralbes (21) Vallvidrera, el Tibidabo i les Planes (22), Sarrià (23), Les Tres Torres (24), Sant Gervasi-la Bonanova(25) and Sant Gervasi-Galvany (26) stands as areas with higher second-hand house prices level of income .

We observe also the normal behavior of the variable average occupation because during the four years the average has remained fairly constant likewise also the standard deviation. Therefore, we decided to eliminate this variable in our study because it was not useful for explaining the behavior of the second-hand house prices.

As for the number of foreigners in each neighbourhood, the neighborhoods with the highest number of foreigners are Raval (1),Barri Gòtic (2), Poble Sec-Parc Montjuïc (11), and Vila de Gràcia (31) and the largest rent price of commercial locals are in Barri Gòtic (2) and Barceloneta (3).

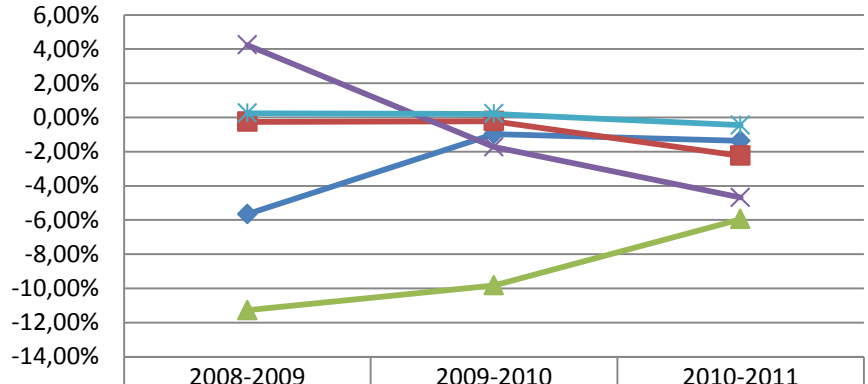
TIME SERIES

Ciutat Vella



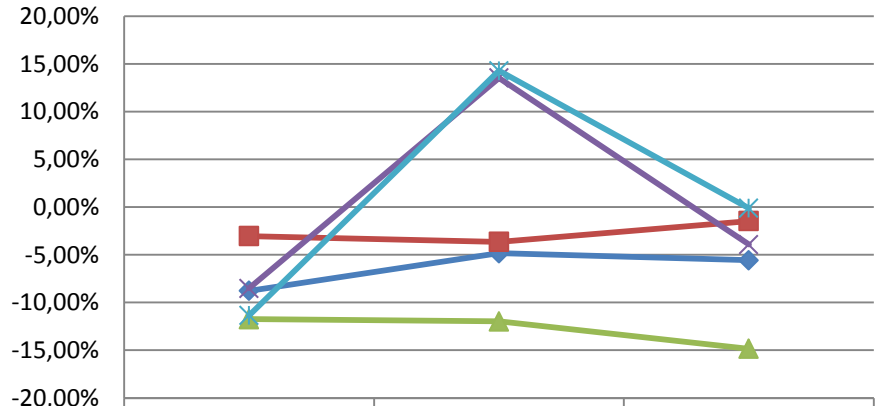
	2008-2009	2009-2010	2010-2011
Price2h	-8,96%	2,37%	2,05%
Percincome	6,32%	2,75%	1,57%
Commercialprice	-11,04%	-3,60%	-2,69%
Nforeigner	-3,27%	-5,26%	-4,74%
Home	0,67%	0,50%	-1,30%

Eixample



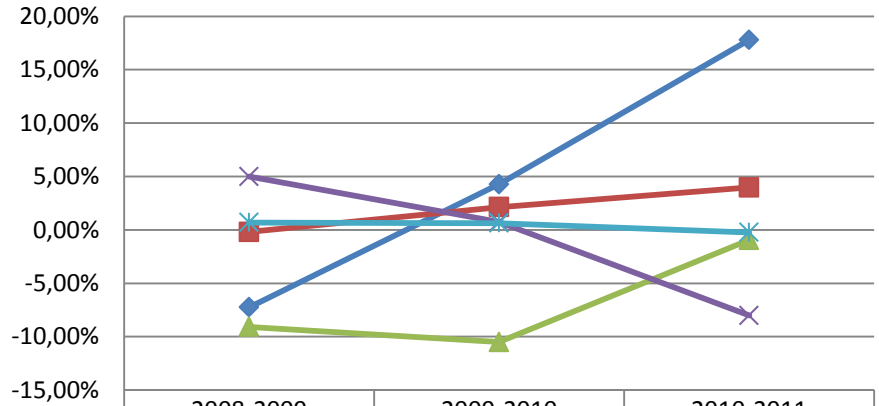
	2008-2009	2009-2010	2010-2011
Price2h	-5,66%	-0,98%	-1,37%
Percincome	-0,26%	-0,22%	-2,24%
Commercialprice	-11,28%	-9,83%	-5,95%
Nforeigner	4,23%	-1,73%	-4,69%
Home	0,25%	0,21%	-0,45%

Sants-Montjuïc



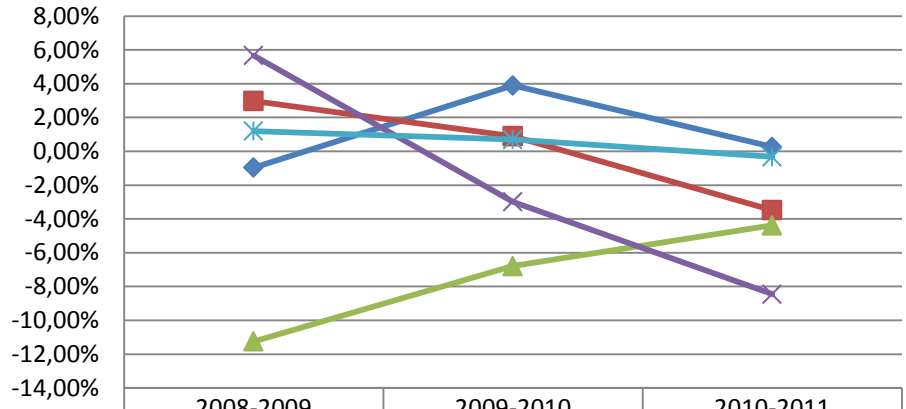
	2008-2009	2009-2010	2010-2011
Price2h	-8,78%	-4,83%	-5,57%
Percincome	-3,04%	-3,64%	-1,47%
Commercialprice	-11,75%	-11,97%	-14,84%
Nforeigner	-8,53%	13,52%	-3,93%
Home	-11,36%	14,28%	-0,12%

Les Corts



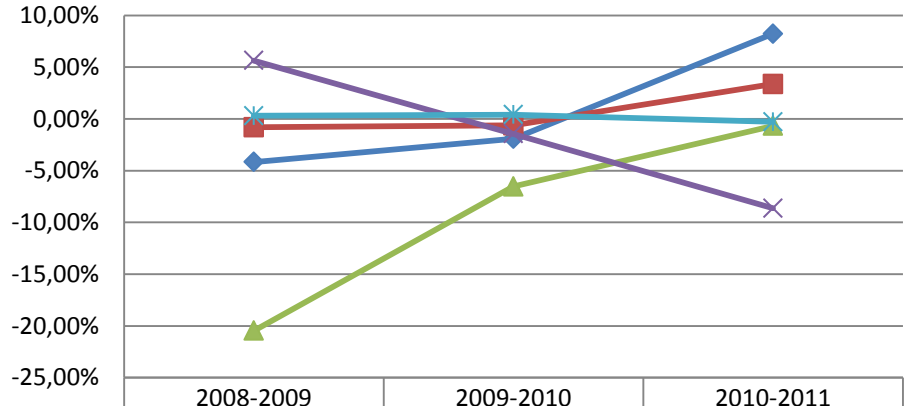
	2008-2009	2009-2010	2010-2011
Price2h	-7,25%	4,28%	17,80%
Percincome	-0,20%	2,13%	3,98%
Commercialprice	-9,09%	-10,50%	-0,95%
Nforeigner	5,00%	0,74%	-8,03%
Home	0,69%	0,63%	-0,25%

Sarrià-Sant Gervasi



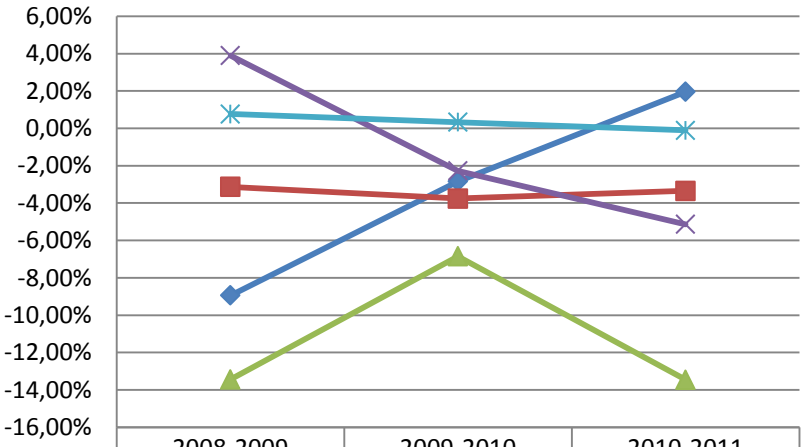
	2008-2009	2009-2010	2010-2011
Price2h	-0,96%	3,89%	0,26%
Percincome	2,98%	0,89%	-3,48%
Commercialprice	-11,24%	-6,78%	-4,38%
Nforeigner	5,67%	-2,98%	-8,45%
Home	1,20%	0,70%	-0,33%

Gràcia



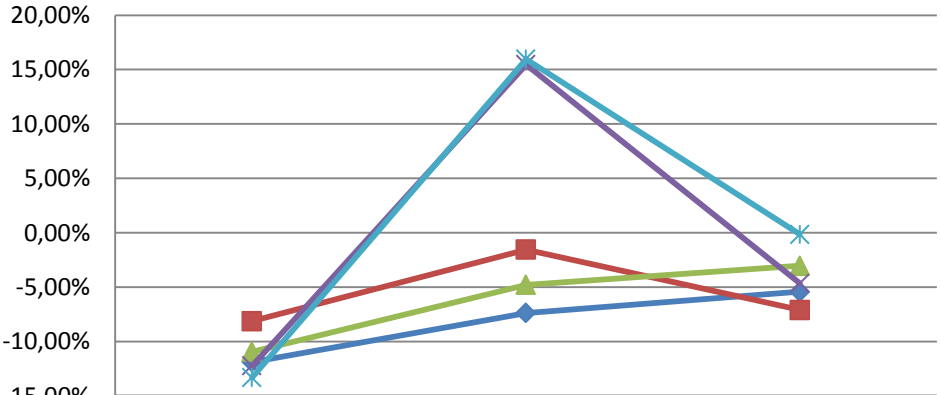
	2008-2009	2009-2010	2010-2011
Price2h	-4,17%	-1,93%	8,22%
Percincome	-0,81%	-0,62%	3,36%
Commercialprice	-20,47%	-6,54%	-0,67%
Nforeigner	5,64%	-1,44%	-8,63%
Home	0,30%	0,41%	-0,28%

Horta-Guinardó



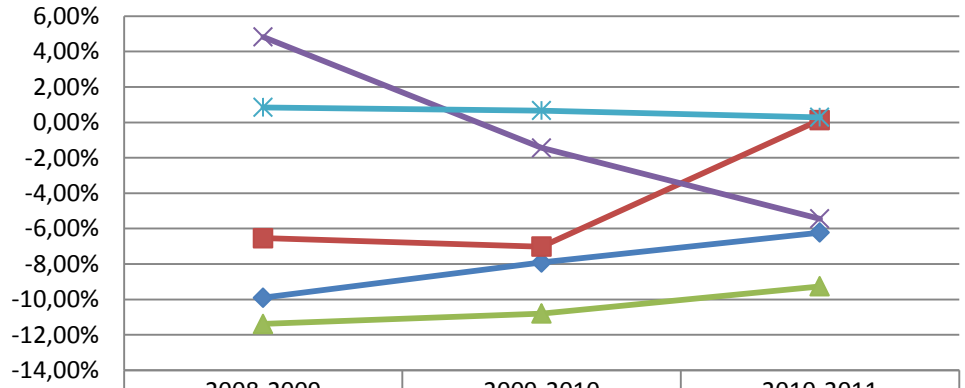
	2008-2009	2009-2010	2010-2011
Price2h	-8,94%	-2,84%	1,96%
Percincome	-3,13%	-3,75%	-3,35%
Commercialprice	-13,44%	-6,85%	-13,46%
Nforeigner	3,90%	-2,27%	-5,14%
Home	0,77%	0,33%	-0,10%

Nous Barris



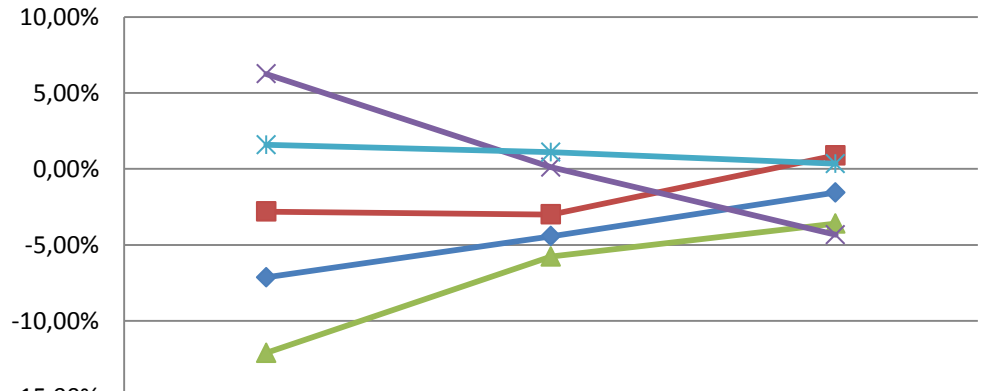
	2008-2009	2009-2010	2010-2011
Price2h	-11,89%	-7,38%	-5,42%
Percincome	-8,14%	-1,55%	-7,11%
Commercialprice	-10,94%	-4,79%	-3,04%
Nforeigner	-12,25%	15,46%	-4,66%
Home	-13,32%	15,96%	-0,16%

Sant Andreu



	2008-2009	2009-2010	2010-2011
Price2h	-9,91%	-7,91%	-6,22%
Percincome	-6,54%	-7,02%	0,13%
Commercialprice	-11,38%	-10,80%	-9,26%
Nforeigner	4,82%	-1,44%	-5,45%
Home	0,85%	0,67%	0,28%

Sant Martí



	2008-2009	2009-2010	2010-2011
Price2h	-7,14%	-4,44%	-1,56%
Percincome	-2,82%	-3,00%	0,89%
Commercialprice	-12,11%	-5,77%	-3,60%
Nforeigner	6,25%	0,11%	-4,34%
Home	1,58%	1,09%	0,34%

We can see in the graphs above that there have been a general sharp drop in the districts between 2008-2009 in the second-hand house prices due to the crisis started in United States that affected the rest of the countries. On the following years, these decrease is not as pronounced and in some cases, there is an increase. This phenomenon, not only affected the second-hand house prices but also affected the rent price of commercial locals in almost all the districts.

In addition, we observe a decrease in the number of foreigners from 2008 to 2011 in nearly all the districts, more pronounced from 2010 to 2011. This fact has a consequence in the number of homes that as we could see, there is a small drop in all districts from 2010 to 2011. It is not as pronounced as the number of foreigners because we take into account more than 160000 people living in Barcelona not only the foreign people.

SECOND PART: ECONOMETRIC ANALYSIS

Once the data was chosen we proceed with an econometric analysis of the multiple linear regression model using a statistical software called SPSS.

The steps for the analysis were:

1. **Relationship between endogenous and each of the explanatory variables.** We made a dispersion graph which relates the endogenous variable (second-hand house prices) with exogenous variable (percincome, commercialocals, Nforeigner and home). In this graph we have drawn a trend line that defines the linear trajectory following the data.

2. **Correlation matrix.** We made a correlation matrix to obtain the Pearson linear correlation coefficient (r_{XY}): this ratio provides the linear relationship between quantitative variables X and Y. The value of Pearson's linear correlation coefficient is always between the values -1 and 1. rxy=1 if there is perfect positive linear correlation however, if rxy=-1 is perfect negative linear correlation.

3. **The best specification for the proposed model.** In this step, we looked for the model that best explains the relationship of the endogenous variable with the exogenous variables. We looked among all possible models which had the higher Adjusted R Square.

   We had three tables:
   - In the first table we found the correlation coefficient (symbolized by R), the coefficient of determination (R^2) and coefficient of determination straps and standard deviation of the errors (S). We focus on R^2 as a measure of the adjustment model. It is the ratio between the variable explained by exogenous and endogenous variation of the whole. This is bounded between 0 and 1. When it is 0, we can say that the model does not explain the variation in endogenous variable.

   - The second table is the ANOVA analysis of variance with the F statistic; the last column is read like the coefficient of joint significance; if it is less than 0.05 we reject H_0; otherwise we do not reject H_0.

In the last table you can see the coefficients α and β and its estimates of standard deviation. The next column corresponds to *t* that we use to compare statistical parameters individually. The column Sig is used to reject or not to reject H_0 individually.

- Considerations before continuing:
  - The estimated value of β, a measure of the slope of the other, indicating that the increase in a monetary unit of average in X causes Y.
  - The value of the estimator α is the independent term that indicates the value of Y when X is 0. This is a mechanical interpretation of the term "independent." In a regression analysis, the independent term does not always make sense.

4. Partial derivative and elasticity to determine the effect of X_j on Y.

For simplicity, we only consider the relationship between the endogenous variable Y and the exogenous variables, for example the variable X_2.

a) Linear relation: $Y=\beta_1+ \beta_2X_2 +\beta_3X_3 +\dots \beta_KX_K$. In this situation $\frac{\partial Y}{\partial X_2} = \beta_2$ and $\varepsilon= \beta_2 \frac{X_2}{Y}$
b) Logarithmic relation: $lnY= \beta_1+ \beta_2lnX_2 +\beta_3X_3 +\dots \beta_KX_K$. In this situation $\frac{\partial Y}{\partial X_2} = \beta_2 \frac{Y}{X_2}$ and $\varepsilon=\beta_2$.
c) Linear and logarithmic relation: $Y=\beta_1+ ln\beta_2X_2 +\beta_3X_3 +\dots \beta_KX_K$. In this situation $\frac{\partial Y}{\partial X_2} = \beta_2 \frac{1}{X_2}$ and $\varepsilon= \beta_2 \frac{1}{Y}$

As we lack the perturbation term in the model, the derivation and elasticity is interpreted based on the expected value of the endogenous variable. That it is, for example ε=2, then a 1% increase in variable X_2 (considering that the other exogenous variables are fix) implies that the expected value of the endogenous increased by 2%. Secondly, the calculation of the derivation and elasticity, as in the model parameters are not known, you must work with estimations. In addition, since the values of Y and X_2 vary for each individual, we are going to work with the sample mean $\overline{Y}$ and $\overline{X_2}$.

5. Presence of atypical observations

a) Leverage of an observation. An observation has leverage when the values of the explanatory variables are very far from the observed values in other observations.

b) Analysis of the residuals. A detailed analysis of the residues of the regression allows detecting those observations that are outliers, so they do not fit the same model as the other observations. The criteria for detecting outliers is based on several residual modifications MQO:

   - Analysis of standardized residuals: the residuals divided by the MQO estimation of the standard deviation of the disturbance term. The idea is to

consider this residual as atypical if the observed value is extreme in a standard normal distribution.

$$\frac{ei}{\hat{\sigma}_u}$$

This criterion is quite debatable. First I have to say that the distribution of each of the residual standardized is not exactly a normal standard because var (e_i)=σ_u^2. In addition, if the sample is a real outlier who has real influence, the residual associated with this observation tends to be smaller. In this case, this criterion is considered as an outlier observation.

- Analysis of the studentized residuals: if we want to standardize in a properly way the residuals, it is not sufficient to divide by σ_u. The studentized residual is defined by the standardization of the residuals MQO:

$$r_i = \frac{ei}{\hat{\sigma}_u * \sqrt{1 - h_{ii}}}$$

- Analysis of the studentized deleted residuals

$$r_i * = r_i \sqrt{\frac{N - k - 1}{N - k - r_i^2}}$$

This formula shows that when an observation has high studentized residuals, the magnitude of its studentized deleted residuals tends to be much higher. In these cases, the difference of a degree of freedom in the critical value of the t Student, which is not worth of the difference in magnitude and generally studentized deleted residuals, detects outliers that a studentized residual don't detect.

c) Cook's distance. The fact that the present observation is an outlier or leverage is not sufficient to determine that this observation has a real influence in an analysis of the model. Cook's distance measures the degree of influence in any real analysis of the model. Cook's distance measures the degree of influence that has an actual observation in the estimation process and the degree of fit of the model.

$$DCi = \frac{h_{ii}}{1 - h_{ii}} \frac{r_i^2}{k}$$

In fact, this formula establishes a direct relationship between the Cook's distance of one observation and his lever and the studentized residual. That it is, if an observation presents leverage and it is an outlier, then the Cook's distance will be great.

6. Study of Multicollineraity.

The study of multicollinearity in a regression model is a sample problem. In this situation, the data is not sufficiently adequate for estimating the parameters. A regression model has perfect

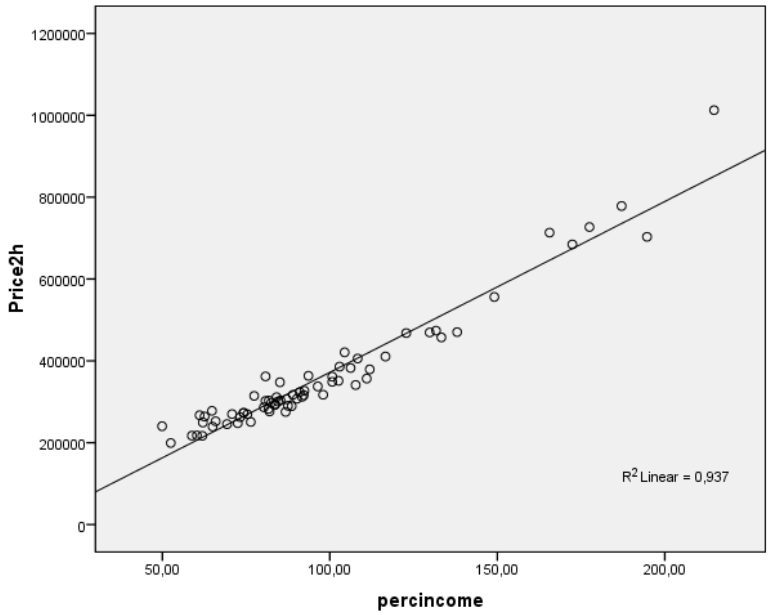
multicollinearity when in a sample level, it is possible to find an explanatory variable as a linear combination of the others.

MULTIPLE LINEAR REGRESSION MODEL 2008

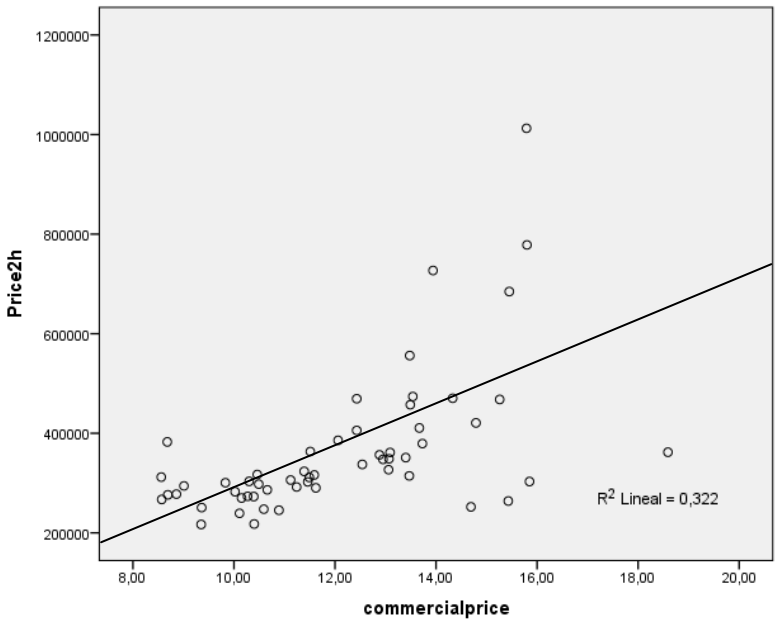
Model: $Price2h_i = \beta_1 + \beta_2 avgocuaption_{2i} + \beta_3 percincome_{3i} + \beta_4 commercialprice_{4i} + \beta_5 NForeigner_{5i} + \beta_6 Home_{6i} + u_i$

1. Relationship between endogenous and each of the explanatory variables.

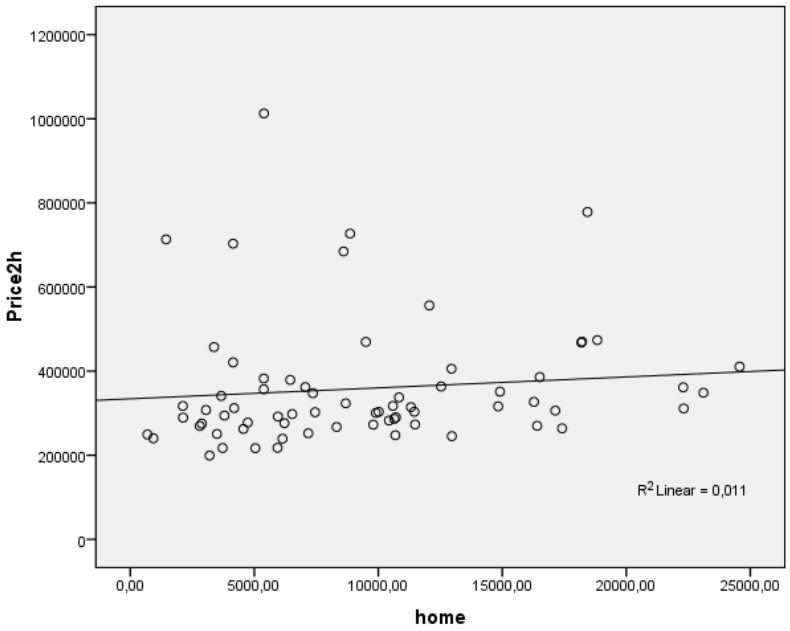
- Graph between second-hand house prices and the percentage of income



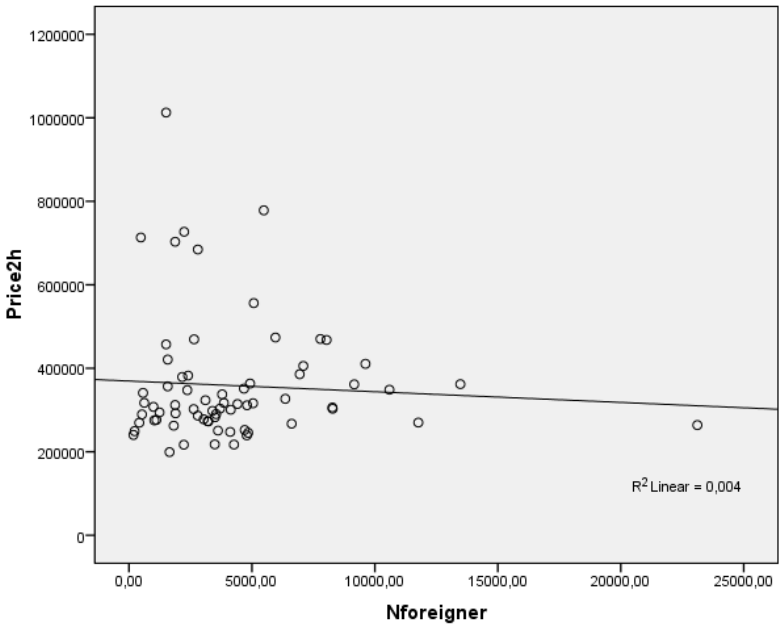
- Graph between second-hand house prices and the rent price of commercial locals



- Graph between second-hand house prices and the number homes



- Graph between second-hand house prices and the number of foreigners



2. Correlation matrix

- Analyze → Correlate → Bivariate
- Select the variables that we want to study
- Options→
  - Means and standard deviations
  - Missing values:
    - Exclude cases pariwise: not enter into the analysis of individuals who have lost some value to the variables being analyzed. The number of cases is different.
    - Exclude cases listwise: only they have lost some value in the variables under consideration, as it is in all. The number of cases is the same

Correlaciones

		Price2h	percincome	commercialprice	Nforeigner	Home
Price2h	Pearson Correlation	1	,970**	,567**	-,108	,088
	Sig. (bilateral)		,000	,000	,427	,521
	N	56	56	56	56	56
Percincome	Pearson Correlation	,970**	1	,541**	-,154	,136
	Sig. (bilateral)	,000		,000	,256	,317
	N	56	56	56	56	56
commercialprice	Pearson Correlation	,567**	,541**	1	,401**	,288*
	Sig. (bilateral)	,000	,000		,002	,031
	N	56	56	56	56	56
Nforeigner	Pearson Correlation	-,108	-,154	,401**	1	,604**
	Sig. (bilateral)	,427	,256	,002		,000
	N	56	56	56	56	56
Home	Pearson Correlation	,088	,136	,288*	,604**	1
	Sig. (bilateral)	,521	,317	,031	,000	
	N	56	56	56	56	56

**. The correlation is significant at the level 0,01 (bilateral).

*. The correlation is significant at the level 0,05 (bilateral).

The correlation coefficient between the second-hand house prices and percincome is the highest of all and can explain the variation in endogenous.

Model: $Price2h_i = \beta_1 + \beta_2 percincome_{2i} + \beta_3 commercialprice_{3i} + \beta_4 NForeigner_{4i} + \beta_5 Home_{5i} + u_i$

3. The best specification for the proposed model

To transform the variables and get the logarithm I use the *Transform menu – Compute variable - Group of arithmetic functions.* With different endogenous variables, the best specification for the model is based on the value of the Adjusted R Square.

The best model is:

Log-log (home, percincome linear) relation

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,983[a]	,966	,964	,05945

a. Predictors: (Constant), percincome, home, LNcommercialprice, LNforeigner

The coefficient of determination is 0,966 which means that our model explains nearly all the variation in endogenous.

ANOVAa

Modelo		Suma de cuadrados	gl	Media cuadrática	F	Sig.
1	Regresión	5,199	4	1,300	367,684	,000[b]
	Residual	,180	51	,004		
	Total	5,379	55			

a. Variable dependiente: LNPrice2h

b. Variables predictoras: (Constante), home, percincome, LNcommercialprice, LNNforeigner

H_0: $\beta_2 = \beta_3 = \beta_4 = 0$

H_1: no H_0

The "p-value" is the ANOVA table is 0.000 and significance level ($\alpha = 0.05$) and therefore we reject the null hypothesis. Therefore, the parameters of the variables LNNforeigner, home, percincome and LNcommercialprice are different from 0 and this means that the two variables are jointly significant.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	11,270	,166		67,944	,000
	LNNforeigner	,035	,023	,071	1,513	,137
	LNcommercialprice	,133	,061	,080	2,179	,034
	Home	-2,846E-6	,000	-,050	-1,206	,233
	Percincome	,009	,000	,953	25,492	,000

a. Dependent Variable: LNPrice2h

Model: $LNPrice2h_i = 11,270 + 0,009percincome_{2i} + 0,133LNcommercialprice_{3i} + 0,035LNNForeigner_{4i} - 2,846*10^{-6}home_{5i} + u_i$

If we make the contrast individual significance for each of the variables we obtain:

$$\begin{cases} H_0: \beta_2 = 0 \\ H_1: \beta_2 \neq 0 \end{cases}$$

The "*p-value*" of the variable percincome is 0,000 and is less than significance level ($\alpha = 0,05$), so we reject H_0. If we reject the null hypothesis, we can reject the value of the coefficient of the variable percincome is zero and therefore percincome variable is significant in explaining the variation of the endogenous variable.

$$\begin{cases} H_0: \beta_3 = 0 \\ H_1: \beta_3 \neq 0 \end{cases}$$

The "*p-value*" of the variable LNcommercialprice is 0,034 and is less than the significance level ($\alpha = 0.05$), so do we reject H_0. If we reject the null hypothesis, we can reject the value of the coefficient of the variable LNcommercialprice is zero and therefore LNommercialprice variable is significant in explaining the variation of the endogenous variable.

$$\begin{cases} H_0: \beta_4=0 \\ H_1: \beta_4\neq 0 \end{cases}$$

The "*p-value*" of the variable LNNforeigner is 0,137 and is higher than the significance level ($\alpha = 0.05$), so we don't reject H_0. If we don't reject the null hypothesis, we cannot reject that the value of the coefficient of the variable LNNforeigner is zero and therefore LNNforeigner variable is not significant in explaining the variation of the endogenous variable.

$$\begin{cases} H_0: \beta_5=0 \\ H_1: \beta_5\neq 0 \end{cases}$$

The "*p-value*" of the variable home is 0,233 and is higher than the significance level ($\alpha = 0.05$), so we don't reject H_0. If we don't reject the null hypothesis, we cannot reject that the value of the coefficient of the variable home is zero and therefore home variable is not significant in explaining the variation of the endogenous variable.

4. Partial derivative and elasticity to determine the effect of X_j on Y.

Statistics

		Price2h	Percincome	commercialprice	Nforeigner	home
N	Valid	69	73	72	73	73
	Missing	26	22	23	22	22
Mean		358673,12	95,3274	9,3926	3989,7123	8907,6438

PERCINCOME

$\frac{dY}{dX} = \beta_2 * \bar{Y} = 0{,}009 * 358673{,}12 = 3228{,}06$; If there is an increase of 1 unit in the percentage of income, the second-hand house prices increases by $3228{,}06$€.

$\varepsilon = \beta_2 * \overline{x_2} = 0{,}009 * 95{,}3274 = 0{,}86$; If there is an increase of 1% in the percentage of income, the second-hand house prices increases by $0{,}86\%$.

LNCOMMERCIALPRICE

$\frac{dY}{dX} = \beta_3 \frac{\bar{Y}}{\overline{x_3}} = 0{,}133 * \frac{358673{,}12}{9{,}3926} = 5078{,}84$; If there is an increase of 1 unit in the rent price of commercial locals, the second-hand house prices increases by $5078{,}84$ €.

$\varepsilon = \beta_3 = 0{,}133$; If there is an increase of 1% in the rent price of commercial locals, the second-hand house prices increases by $0{,}133\%$.

LNNFOREIGNER

$\frac{dY}{dX} = \beta_4 \frac{\bar{Y}}{\overline{x_4}} = 0{,}035 * \frac{358673{,}12}{3989{,}7123} = 3{,}15$; If there is an increase of 1 unit in the number of foreigners the second-hand house prices increases $3{,}15$ €.

$\varepsilon = \beta_4 = 0{,}035$; If there is an increase of 1% the number of foreigners, the second-hand house prices increases in $0{,}035$ %.

HOME

$\frac{dY}{dX} = \beta_5 * \bar{Y} = -0{,}000002846 * 358673{,}12 = -1{,}02$; If there is an increase of 1 unit in the number of homes, the second-hand house prices decreases by $1{,}02€$.

$\varepsilon = \beta_5 * \overline{x_5} = -0{,}000002846 * 8907{,}6438 = -0{,}025$; If there is an increase of 1% in the number of homes, the second-hand house prices decreases by $0{,}025\%$.

5. Presence of atypical observations

Anayze – Regression– linear – Save (Mahalanobis distances, Cook's distance,Standardized residuals, Studentized residuals, Studentized deleted residuals)

MAH_1: Mahalanobis distances(di)
COO_1: Cook's distance
ZRE_1: Standardized residuals
SRE_1: Studentized residuals
SDR_1: Studentized deleted residuals

h_{ii} = (1+MAH_1)/n

$$\frac{1-di}{N} = h_{ii} > 2\bar{h} = 2\frac{k}{n}$$

$$d_i > 2k - 1$$

Leverage

$$h_{ii} > 2\frac{k}{n} = 2 * \frac{5}{56} = 0{,}1785714285714286$$

The observations that present leverage are:

- Observation 1. el Raval: h_{ii} = 0,19981
- Observation 2. el Barri Gòtic: h_{ii} = 0,34763
- Observation 24. les Tres Torres: h_{ii} = 0,28875
- Observation 60. Sant Andreu: h_{ii} = 0,19954

Analysis of Standardized residuals (residue >= 2 → Outlier):

- Observation 69. Diagonal Mar and el Front Marítim del Poblenou: h_{ii} = 2,10767
- Observation 71. Provençals del Poblenou: h_{ii} = 2,06241

Analysis of Studentized residuals (r >= tn-k → Outlier):

$t_{n-k,\alpha} = t_{51} = 2{,}0085$

- Observation 59. el Bon Pastor: h_{ii} = 2,06679
- Observation 69. Diagonal Mar and el Front Marítim del Poblenou: h_{ii} = 2,30397
- Observation 71. Provençals del Poblenou: h_{ii} = 2,15069

Analysis of Studentized deleted residuals (r >= tn-k-1 → Outlier):

$t_{n-k-1,\alpha} = t_{50} = 2{,}009$

- Observation 59. el Bon Pastor: h_{ii} = 2,13791
- Observation 69. Diagonal Mar and el Front Marítim del Poblenou: h_{ii} = 2,41015
- Observation 71. Provençals del Poblenou: h_{ii} = 2,23318

Cook's distance (DC >= Fk, N-k →real influence):

$F_{k,n-k} = F_{5,51} = 2{,}40$

There are no observations with real influence.

6. Study of multicollinearity.

VIF: *Analize – Regression–Linear – Statistics – Collinearity diagnostics*

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	11,270	,166		67,944	,000		
	Percincome	,009	,000	,953	25,492	,000	,470	2,127
	LNcommercialprice	,133	,061	,080	2,179	,034	,490	2,043
	LNNforeigner	,035	,023	,071	1,513	,137	,301	3,323
	Home	-2,846E-6	,000	-,050	-1,206	,233	,381	2,625

a. Dependent Variable: LNPrice2h

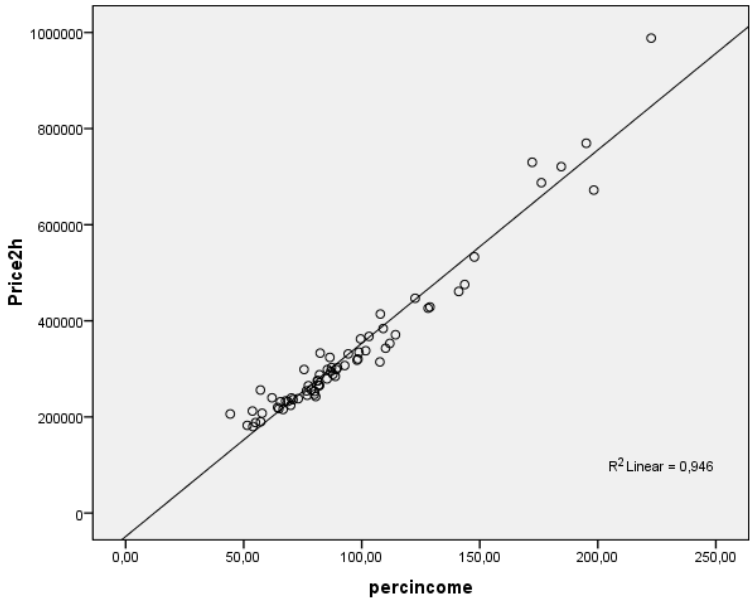
None of the variables has a VIF higher than 10 therefore so none of them presents multicollinearity.

MULTIPLE LINEAR REGRESSION MODEL 2009

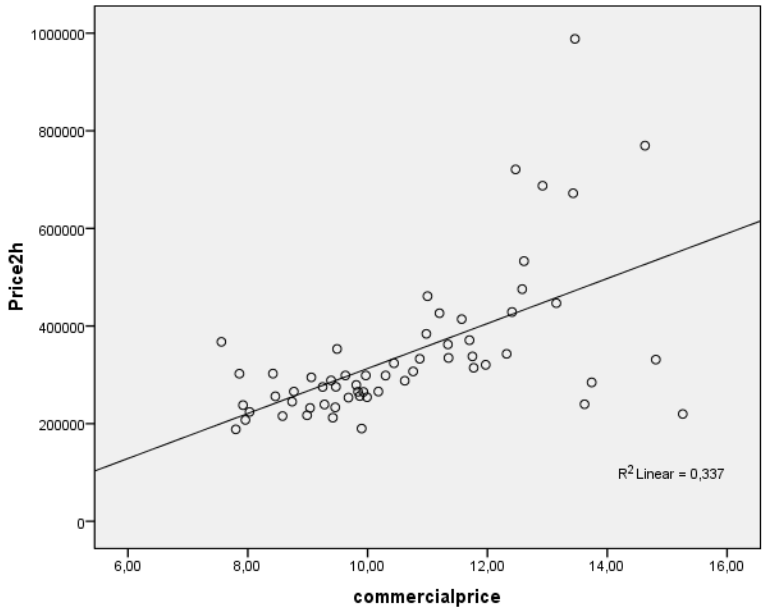
Model: $Price2h_i = \beta_1 + \beta_2 avgocuaption_{2i} + \beta_3 percincome_{3\ i} + \beta_4 commercialprice_{4i} + \beta_5 NForeigner_{5i} + \beta_6 Home_{6i} + u_i$

1. Relationship between endogenous and each of the explanatory variables.

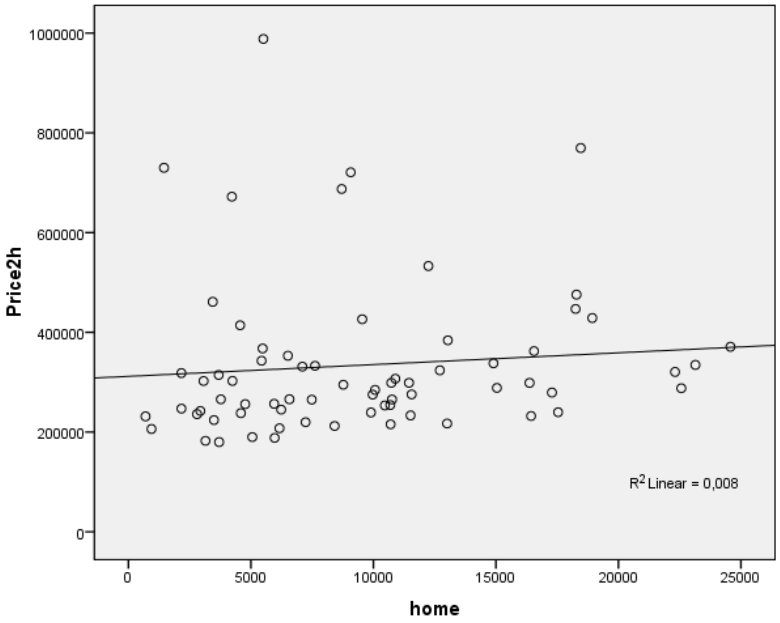
- Graph between second-hand house prices and the percentage of income



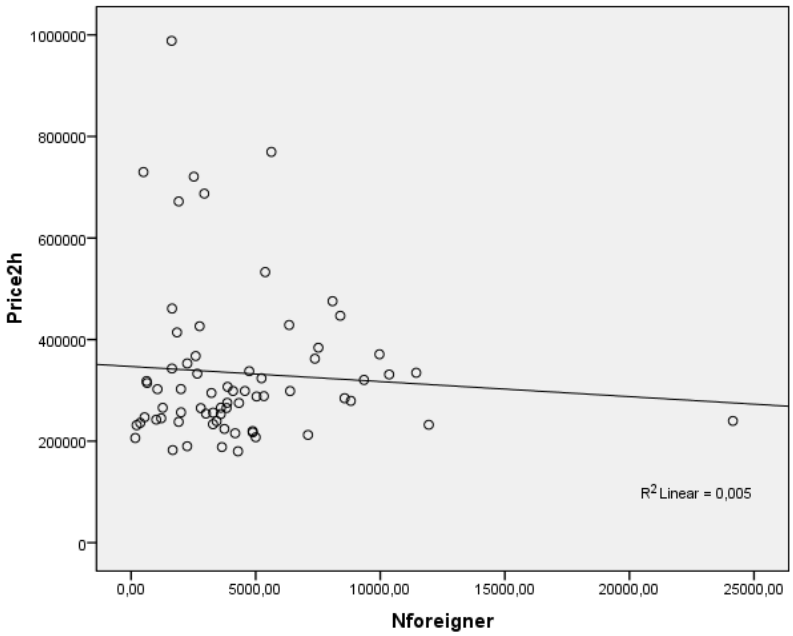
- Graph between second-hand house prices and the rent price of the commercial locals



- Graph between second-hand house prices and the number of homes



- Graph between second-hand house prices and the number of foreigners



2. Correlation matrix

- Analyze → Correlate → Bivariate
- Select the variables that we want to study
- Options→
  - Means and standard deviations
  - Missing values:
    - Exclude cases pariwise: not enter into the analysis of individuals who have lost some value to the variables being analyzed. The number of cases is different.
    - Exclude cases listwise: only they have lost some value in the variables under consideration, as it is in all. The number of cases is the same

Correlaciones

		Price2h	percincome	commercialprice	Nforeigner	Home
Price2h	Pearson Correlation	1	,973**	,581**	-,071	,091
	Sig. (bilateral)		,000	,000	,560	,458
	N	69	69	60	69	69
Percincome	Pearson Correlation	,973**	1	,599**	-,026	,173
	Sig. (bilateral)	,000		,000	,825	,142
	N	69	73	60	73	73
commercialprice	Pearson Correlation	,581**	,599**	1	,355**	,305*
	Sig. (bilateral)	,000	,000		,005	,018
	N	60	60	60	60	60
Nforeigner	Pearson Correlation	-,071	-,026	,355**	1	,734**
	Sig. (bilateral)	,560	,825	,005		,000
	N	69	73	60	73	73
Home	Pearson Correlation	,091	,173	,305*	,734**	1
	Sig. (bilateral)	,458	,142	,018	,000	
	N	69	73	60	73	73

**. The correlation is significant at the level 0,01 (bilateral).

*. The correlation is significant at the level 0,05 (bilateral).

The correlation coefficient between the second-hand house prices and percincome is the highest of all and can explain the variation in endogenous.

3. The best specification for the proposed model

To transform the variables and get the logarithm I use the *Transform menu – Compute variable - Group of arithmetic functions.* With diferent endogenus variables, the best specification for the model is based on the value of the Adjusted R Square.

The best model is:

Log-log (percincome linear) relation

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,979[a]	,958	,955	,07478

a. Predictors: (Constant), percincome, LNhome, LNcommercialprice, LNNforeigner

The coefficient of determination is 0,958, which means that our model explains nearly all the variation in endogenous.

ANOVA[b]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	7,022	4	1,756	313,978	,000[a]
	Residual	,308	55	,006		
	Total	7,330	59			

a. Predictors: (Constant), percincome, LNhome, LNcommercialprice, LNNforeigner

b. Dependent Variable: LNPrice2h

$$\begin{cases} H_0: \beta_2 = \beta_3 = \beta_4 = 0 \\ H_1: \text{no } H_0 \end{cases}$$

The "p-value" in the ANOVA table is 0,000 which is less than the significance level ($\alpha = 0.05$) and therefore we reject the null hypothesis. Therefore, the parameters of the variables LNhome, LNNforeigner, LNcommercialprice and percincome are different from 0 and this means that the two variables are jointly significant.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	11,461	,188		61,054	,000
	LNhome	,014	,030	,023	,477	,635
	LNNforeigner	,016	,026	,031	,603	,549
	LNcommercialprice	,018	,079	,009	,223	,824
	Percincome	,009	,000	,976	24,854	,000

a. Dependent Variable: LNPrice2h

Model: $LNPrice2h_i = 11,461 + 0,009percincome_{2i} + 0,018LNcommercialprice_{3i} + 0,016LNNForeigner_{4i} + 0,014LNhome_{5i} + u_i$

If we make the contrast individual significance for each of the variables we obtain:

$$\begin{cases} H_0: \beta_2 = 0 \\ H_1: \beta_2 \neq 0 \end{cases}$$

The "*p-value*" of the variable percincome is 0,000 and is less than significance level ($\alpha = 0,05$), so we reject H_0. If we reject the null hypothesis, we can reject the value of the coefficient of the variable percincome is zero and therefore percincome variable is significant in explaining the variation of the endogenous variable.

$$\begin{cases} H_0: \beta_3 = 0 \\ H_1: \beta_3 \neq 0 \end{cases}$$

The "*p-value*" of the variable LNcommercialprice is 0,824 and is higher than the significance level ($\alpha = 0.05$), so we don't reject H_0. If we don't reject the null hypothesis, we cannot reject the value of the coefficient of the variable LNcommercialprice is zero and therefore LNommercialprice variable is not significant in explaining the variation of the endogenous variable.

$$\begin{cases} H_0: \beta_4=0 \\ H_1: \beta_4\neq 0 \end{cases}$$

The "*p-value*" of the variable LNNforeigner is 0,549 and is higher than the significance level (α = 0.05), so we don't reject H_0. If we don't reject the null hypothesis, we cannot reject that the value of the coefficient of the variable LNNforeigner is zero and therefore LNNforeigner variable is not significant in explaining the variation of the endogenous variable.

$$\begin{cases} H_0: \beta_5=0 \\ H_1: \beta_5\neq 0 \end{cases}$$

The "*p-value*" of the variable LNhome is 0,635 and is higher than the significance level (α = 0.05), so we don't reject H_0. If we don't reject the null hypothesis, we cannot reject that the value of the coefficient of the variable LNhome is zero and therefore LNhome variable is not significant in explaining the variation of the endogenous variable.

4. Partial derivative and elasticity to determine the effect of X_j on Y.

Statistics

		Price2h	Percincome	Commercialprice	Nforeigner	Home
N	Valid	69	73	60	73	73
	Missing	22	18	31	18	18
Mean		334087,06	93,7233	10,6130	4121,3973	8973,55

PERCINCOME

$\frac{dY}{dX} = \beta_2 * \overline{Y} = 0{,}009 * 334087{,}06 = 3006{,}78$; If there is an increase of 1 unit in the percentage of income, the second-hand house prices increases by $3006{,}78$€.

$\varepsilon = \beta_2 * \overline{X_2} = 0{,}009 * 93{,}7233 = 0{,}84$; If there is an increase of 1% in the percentage of income, the second-hand house prices increases by $0{,}84\%$.

LNCOMMERCIALPRICE

$\frac{dY}{dX} = \beta_3 \frac{\bar{Y}}{\overline{x_3}} = 0{,}018 * \frac{334087{,}06}{10{,}6130} = 566{,}62$; If there is an increase of 1 unit in the rent price of commercial locals, , the second-hand house prices increases by $566{,}62$ €.

$\varepsilon = \beta_3 = 0{,}035$; If there is an increase of 1% in the rent price of commercial locals, the second-hand house prices increases by $0{,}035\%$.

LNNFOREIGNER

$\frac{\mathrm{dY}}{\mathrm{dX}} = \beta_4 \frac{\bar{Y}}{\overline{x_4}} = 0{,}016 * \frac{334087{,}06}{4121{,}3973} = 1{,}30$; If there is an increase of 1 unit in the number of foreigners, the second-hand house prices increases $1{,}30$ €.

$\varepsilon = \beta_4 = 0{,}016$; If there is an increase of 1% the number of foreigners, the second-hand house prices increases in $0{,}016$ %.

LNHOME

$\frac{\mathrm{dY}}{\mathrm{dX}} = \beta_4 \frac{\bar{Y}}{\bar{x_4}} = 0{,}014 * \frac{334087{,}06}{8973{,}55} = 0{,}52$; If there is an increase of 1 unit in the number of homes, the second-hand house prices decreases by $0{,}52€$.

$\varepsilon = \beta_5 = 0{,}014$; If there is an increase of 1% in the number of homes, the second-hand house prices decreases by $0{,}014$ %.

5. Presence of atypical observations

Anayze – Regression– linear – Save (Mahalanobis distances, Cook's distance,Standardized residuals, Studentized residuals, Studentized deleted residuals)

MAH_1: Mahalanobis distances (di)
COO_1: Cook's distance
ZRE_1: Standardized residuals
SRE_1: Studentized residuals
SDR_1: Studentized deleted residuals

h_{ii} = (1+MAH_1)/n

$$\frac{1-di}{N} = h_{ii} > 2\bar{h} = 2\frac{k}{n}$$

$$d_i > 2k - 1$$

Leverage:

$$h_{ii} > 2\frac{k}{n} = 2 * \frac{5}{60} = 0{,}1666666666666667$$

The observations that present leverage are:

- Observation 1 el Raval: h_{ii} = 0,21778
- Observation 2 el Barri Gòtic: $_{hii}$ = 0,25027
- Observation 3 la Barceloneta: h_{ii} = 0,27523
- Observation 21 Pedralbes: h_{ii} = 0,19259
- Observation 24 les Tres Torres: h_{ii} = 0,22727
- Observation 26 Sant Gervasi - Galvany: h_{ii} = 0,15575
- Observation 36 la Font d'en Fargues: h_{ii} = 0,23131
- Observation 57 la Trinitat Vella: h_{ii} = 0,18424

Analysis of Standardized residuals (residue >= 2 → Outlier):

- Observation 21 Pedralbes: r = 2,26455
- Observation 59 el Bon Pastor: r = 2,31980
- Observation 69 Diagonal Mar and el Front Marítim del Poblenou: r = 2,51051
- Observation 71 Provençals del Poblenou: r = 2,58960

Analysis of Studentized residuals (r >= tn-k → Outlier):

$t_{n-k,\alpha} = t_{55} = 2{,}004$

- Observation 21 Pedralbes: r = -2,52486
- Observation 59 el Bon Pastor: r = 2,41542
- Observation 69 Diagonal Mar and el Front Marítim del Poblenou: r = 2,60188
- Observation 71 Provençals del Poblenou: r = 2,65189

Analysis of Studentized deleted residuals (r >= tn-k-1 → Outlier):

$t_{n-k-1,\alpha} = t_{54} = 2{,}0045$

- Observation 21 Pedralbes: r = -2,66075
- Observation 59 el Bon Pastor: r = 2,53139
- Observation 69 Diagonal Mar and el Front Marítim del Poblenou: r = 2,75312
- Observation 71 Provençals del Poblenou: r = 22,81371

Cook's distance (DC >= Fk, N-k →real influence):

$F_{k,n-k} = F_{4,55} = 2{,}54$

There are no observations with real influence.

6. Study of multicollinearity

VIF: Analize – Regression–Linear – Statistics – Collinearity diagnostics

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
1 (Constant)	11,461	,188		61,054	,000		
LNNforeigner	,016	,026	,031	,603	,549	,295	3,390
LNhome	,014	,030	,023	,477	,635	,340	2,945
LNcommercialprice	,018	,079	,009	,223	,824	,480	2,082
Percincome	,009	,000	,976	24,854	,000	,495	2,021

a. Dependent Variable: LNPrice2h

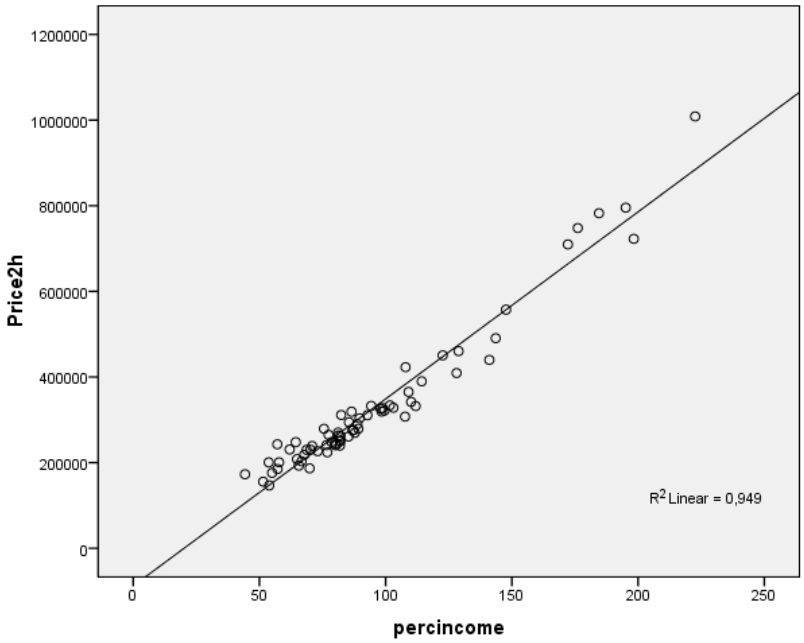
None of the variables has a VIF higher than 10 therefore so none of them presents multicollinearity.

MULTIPLE LINEAR REGRESSION MODEL 2010

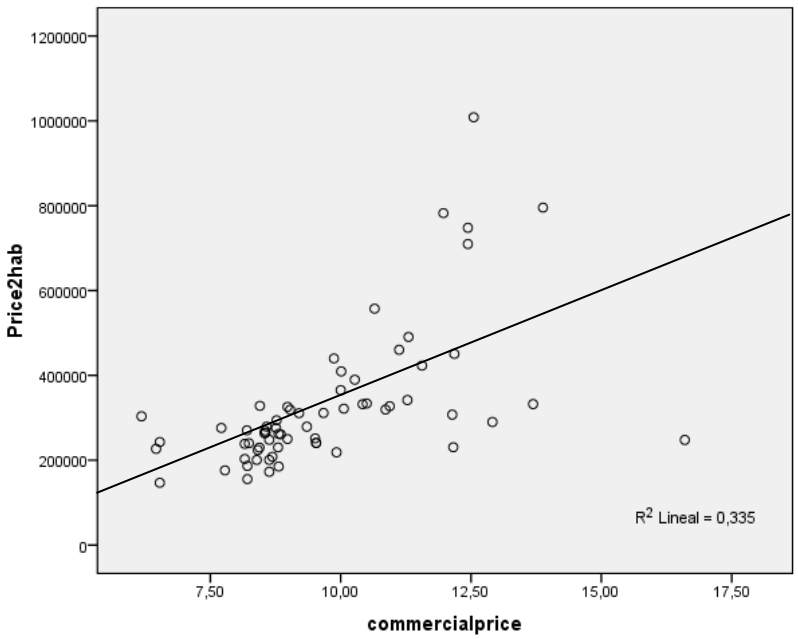
Model: $Price2h_i = \beta_1 + \beta_2 avgocuaption_{2i} + \beta_3 percincome_{3i} + \beta_4 commercialprice_{4i} + \beta_5 NForeigner_{5i} + \beta_3 Home_3 u_i$

1. Relationship between endogenous and each of the explanatory variables

- Graph between second-hand house prices and the percentage of income

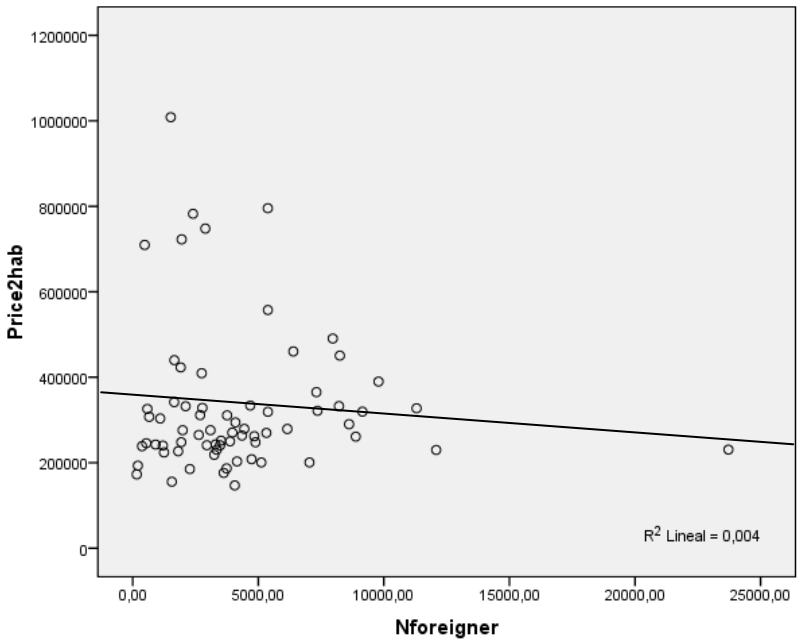


- Graph between second-hand house prices and the rent price of commercial locals

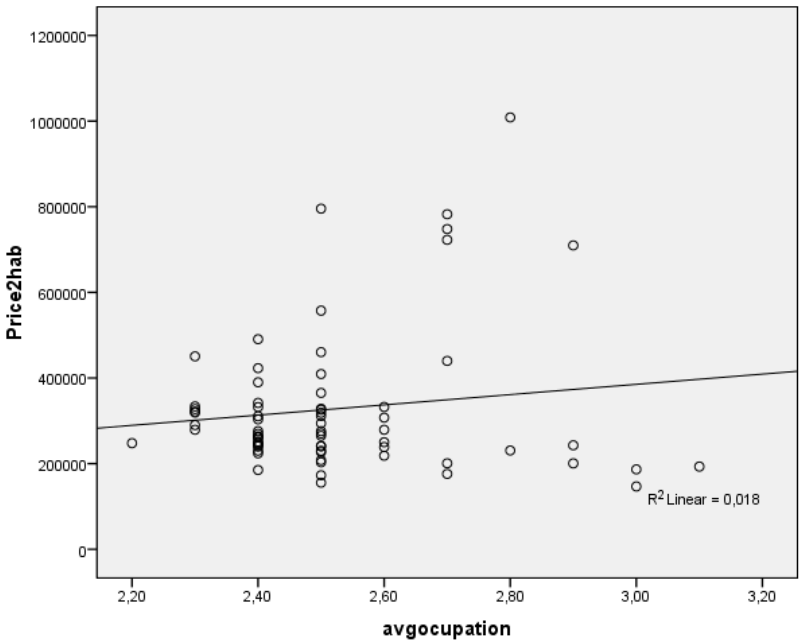


- Graph between second-hand house prices and the number of foreigner people

-



- Graph between second-hand house prices and the number of homes



2. Correlation matrix

- Analyze → Correlate → Bivariate
- Select the variables that we want to study
- Options→
  - Means and standard deviations
  - Missing values:
    - Exclude cases pariwise: not enter into the analysis of individuals who have lost some value to the variables being analyzed. The number of cases is different.
    - Exclude cases listwise: only they have lost some value in the variables under consideration, as it is in all. The number of cases is the same

Correlaciones

		Price2h	percincome	commercialprice	home	Nforeigner
Price2h	Pearson Correlation	1	,974**	,578**	,106	-,061
	Sig. (bilateral)		,000	,000	,385	,620
	N	69	69	65	69	69
percincome	Pearson Correlation	,974**	1	,581**	,175	-,030
	Sig. (bilateral)	,000		,000	,139	,803
	N	69	73	69	73	73
commercialprice	Pearson Correlation	,578**	,581**	1	,291*	,310**
	Sig. (bilateral)	,000	,000		,015	,010
	N	65	69	69	69	69
Home	Pearson Correlation	,106	,175	,291*	1	,742**
	Sig. (bilateral)	,385	,139	,015		,000
	N	69	73	69	73	73
Nforeigner	Pearson Correlation	-,061	-,030	,310**	,742**	1
	Sig. (bilateral)	,620	,803	,010	,000	
	N	69	73	69	73	73

**. The correlation is significant at the level 0,01 (bilateral).

*. The correlation is significant at the level 0,05 (bilateral).

The correlation coefficient between the second-hand house prices and percincome is the highest of all and can explain the variation in endogenous.

Model: $Price2h_i = \beta_1 + \beta_2 percincome_{2i} + \beta_3 commercialprice_{3i} + \beta_4 NForeigner_{4i} + \beta_5 home_{5i} + u_i$

3. The best specification for the proposed model

To transform the variables and get the logarithm I use the *Transform menu – Compute variable - Group of arithmetic functions.* With different endogenous variables, the best specification for the model is based on the value of the Adjusted R Square.

The best model is:

Log-log (percincome, commercialprice linear) relation

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,977[a]	,954	,951	,08778

a. Predictors: (Constant), commercialprice, LNNforeigner, percincome, LNhome

The coefficient of determination is 0,954, which means that our model explains nearly all the variation in endogenous.

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	9,555	4	2,389	310,035	,000[a]
	Residual	,462	60	,008		
	Total	10,018	64			

a. Predictors: (Constant), commercialprice, LNNforeigner, percincome, LNhome

b. Dependent Variable: LNPrice2h

$H_0: \beta_2 = \beta_3 = \beta_4 = 0$

H_1: no H_0

The "p-value" in the ANOVA table is 0.000, is less than the significance level ($\alpha = 0.05$) and therefore we reject the null hypothesis. Therefore, the parameters of the variables LNhome, LNNforeigner, LNcommercialprice and percincome are different from 0 and this means that the two variables are jointly significant.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	11,244	,153		73,522	,000
	percincome	,010	,000	,921	25,394	,000
	commercialprice	,015	,007	,073	2,055	,044
	LNNforeigner	-,015	,026	-,033	-,561	,577
	LNhome	,043	,033	,075	1,294	,201

a. Dependent Variable: LNPrice2h

Model: $LNPrice2h_i = 11,244 + 0,010percincome_{2i} + 0,015commercialprice_{3i} - 0,015LNNForeigner_{4i} + 0,043LNhome_{5i} + ui$

If we make the individual significance contrast for each of the variables we obtain:

$$\begin{cases} H_0: \beta_2 = 0 \\ H_1: \beta_2 \neq 0 \end{cases}$$

The "*p-value*" of the variable percincome is 0,000 and is less than the significance level (α = 0,05), so we reject H_0. If we reject the null hypothesis, we can reject the value of the coefficient of the variable percincome is zero and therefore percincome variable is significant in explaining the variation of the endogenous variable.

$$\begin{cases} H_0: \beta_3 = 0 \\ H_1: \beta_3 \neq 0 \end{cases}$$

The "*p-value*" of the variable commercialprice is 0,044 and is less than the significance level (α = 0.05), so we reject H_0. If we reject the null hypothesis, we can reject that the value of the coefficient of the variable LNcommercialprice is zero and therefore LNcommercialprice variable is significant in explaining the variation of the endogenous variable.

$$\begin{cases} H_0: \beta_4=0 \\ H_1: \beta_4\neq 0 \end{cases}$$

The "*p-value*" of the variable LNNforeigner is 0,577 and is higher than the significance level (α = 0.05), so we don't reject H_0. If we don't reject the null hypothesis, we cannot reject that the value of the coefficient of the variable LNNforeigners is zero and therefore LNNforeigners variable is not significant in explaining the variation of the endogenous variable.

$$\begin{cases} H_0: \beta_5=0 \\ H_1: \beta_5\neq 0 \end{cases}$$

The "*p-value*" of the variable LNhome is 0,201 and is higher than the significance level (α = 0.05), so we don't reject H_0. If we don't reject the null hypothesis, we cannot reject that the value of the coefficient of the variable LNhome is zero and therefore LNhome variable is not significant in explaining the variation of the endogenous variable.

4. Partial derivative and elasticity to determine the effect of X_j on Y.

Statistics

		Price2h	percincome	commercialprice	Nforeigner	home
N	Valid	69	73	69	73	73
	Missing	22	18	22	18	18
Mean		327985,84	93,72	9,6197	4044,7534	9020,90

PERCINCOME

$\frac{dY}{dX} = \beta_2 * \bar{Y} = 0{,}010 * 327985{,}84 = 3279{,}86$; If there is an increase of 1 unit in the percentage of income, the second-hand house prices increases by $3279{,}86$ €.

$\varepsilon = \beta_2 * \overline{x_2} = 0{,}010 * 93{,}72 = 0{,}94$; If there is an increase of 1% in the percentage of income, the second-hand house prices increases by $0{,}94\%$.

COMMERCIALPRICE

$\frac{dY}{dX_3} = \beta_3 * \bar{Y} = 0{,}015 * 327985{,}84 = 4919{,}79$; If there is an increase of 1 unit in the rent price of commercial locals, the second-hand house prices decreases by $4919{,}79$€.

$\varepsilon = \beta_3 * \overline{x_3} = 0{,}015 * 9{,}6197 = 0{,}14$; If there is an increase of 1% in the rent price of commercial locals, the second-hand house prices increases by $0{,}14\%$.

LNNFOREIGNER

$\frac{dY}{dX} = \beta_4 \frac{\bar{Y}}{\overline{x_4}} = -0{,}015 * \frac{327985{,}84}{4044{,}7534} = -4{,}37$; If there is an increase of 1 unit in the number of foreigners, the second-hand house prices decreases $4{,}37$ €.

$\varepsilon = \beta_4 = -0{,}02$; If there is an increase of 1% the number of foreigners, the second-hand house prices decreases in $-0{,}02$ %.

LNHOME

$\frac{dY}{dX_5} = \beta_5 \frac{\bar{Y}}{\bar{x_5}} = 0{,}043 * \frac{327985{,}84}{9020{,}90} = 1{,}56$; If there is an increase of 1 unit in the number of homes, the second-hand house prices increases by $1{,}56€$.

$\varepsilon = \beta_5 = 0{,}04$; If there is an increase of 1% in the number of homes, the second-hand house prices increases by $0{,}04\%$.

5. Presence of atypical observations

Anayze – Regression– linear – Save (Mahalanobis distances, Cook's distance,Standardized residuals, Studentized residuals, Studentized deleted residuals)

MAH_1: Mahalanobis distances(di)
COO_1: Cook's distance
ZRE_1: Standardized residuals
SRE_1: Studentized residuals
SDR_1: Studentized deleted residuals

h_{ii} = (1+MAH_1)/n

$$\frac{1-di}{N} = h_{ii} > 2\bar{h} = 2\frac{k}{n}$$

$$d_i > 2k - 1$$

Leverage

$$h_{ii} > 2\frac{k}{n} = 2 * \frac{5}{65} = 0{,}1538461538461538$$

The observations that present leverage are:

- Observation 1. el Raval: h_{ii} = 0,1693
- Observation 2. el Barri Gòtic: h_{ii} = 0,1796
- Observation 3. la Barceloneta: h_{ii} = 0,4132
- Observation 22. Vallvidrera, el Tibidabo and les Planes: h_{ii} = 0,2164
- Observation 24. les Tres Torres: h_{ii} = 0,2311
- Observation 49. Canyelles: h_{ii} = 0,1578
- Observation 55. Ciutat Meridiana: h_{ii} = 0,1647
- Observation 58. Baró de Viver: h_{ii} = 0,2643

Analysis of Standardized residuals (residue >= 2 → Outlier):

- Observation 55. Ciutat Meridiana: h_{ii} = -2,47561
- Observation 59. el Bon Pastor: h_{ii} = 2,72922
- Observation 69. Diagonal Mar and el Front Marítim del Poblenou: h_{ii} = 2,25968

Analysis of Studentized residuals (r >= tn-k → Outlier):

$t_{n-k,\alpha} = t_{60} = 2{,}000$

- Observation 55. Ciutat Meridiana: h_{ii} = -2,71256

- Observation 59. el Bon Pastor: h_{ii} = 2,86025
- Observation 69. Diagonal Mar and el Front Marítim del Poblenou: h_{ii} = 2,31282

Analysis of Studentized deleted residuals (r >= tn-k-1 → Outlier):

$t_{n-k-1,\alpha} = t_{59} = 2{,}0005$

- Observation 53. la Trinitat Nova: h_{ii} = -2,01601
- Observation 55. Ciutat Meridiana: h_{ii} = -2,87170
- Observation 57. la Trinitat Vella: h_{ii} = -2,04237
- Observation 59. el Bon Pastor: h_{ii} = 3,05201
- Observation 69. Diagonal Mar i el Front Marítim del Poblenou: h_{ii} = 2,40309

Cook's distance (DC >= Fk, N-k →real influence):

$F_{k,n-k} = F_{5,60} = 2{,}37$

There are no observations with real influence.

6. Study of multicollinearity.

VIF: *Analize – Regression–Linear – Statistics – Collinearity diagnostics*

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	11,244	,153		73,522	,000		
	percincome	,010	,000	,921	25,394	,000	,585	1,710
	commercialprice	,015	,007	,073	2,055	,044	,617	1,620
	LNNforeigner	-,015	,026	-,033	-,561	,577	,225	4,450
	LNhome	,043	,033	,075	1,294	,201	,230	4,340

a. Dependent Variable: LNPrice2h

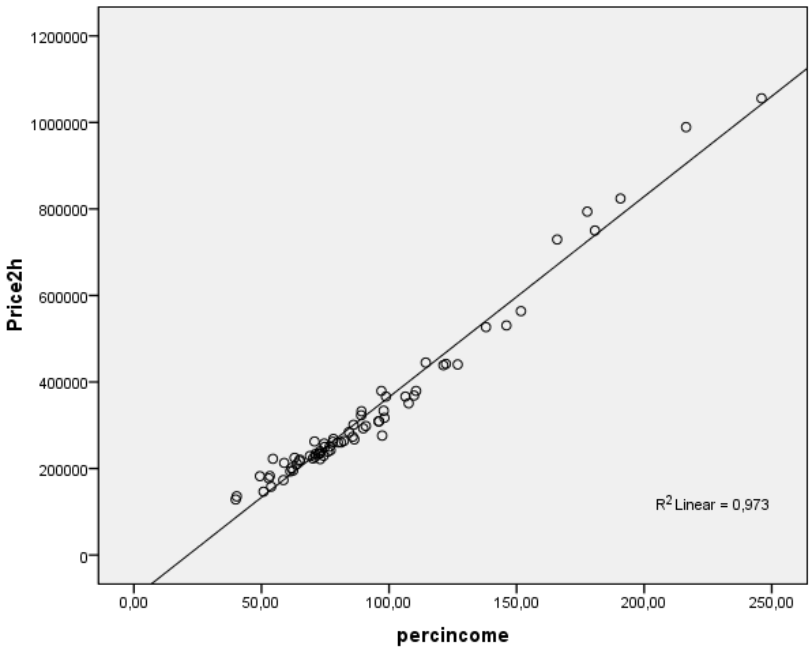
None of the variables has a VIF higher than 10 therefore so none of them presents mulicollinearity.

MULTIPLE LINEAR REGRESSION MODEL 2011

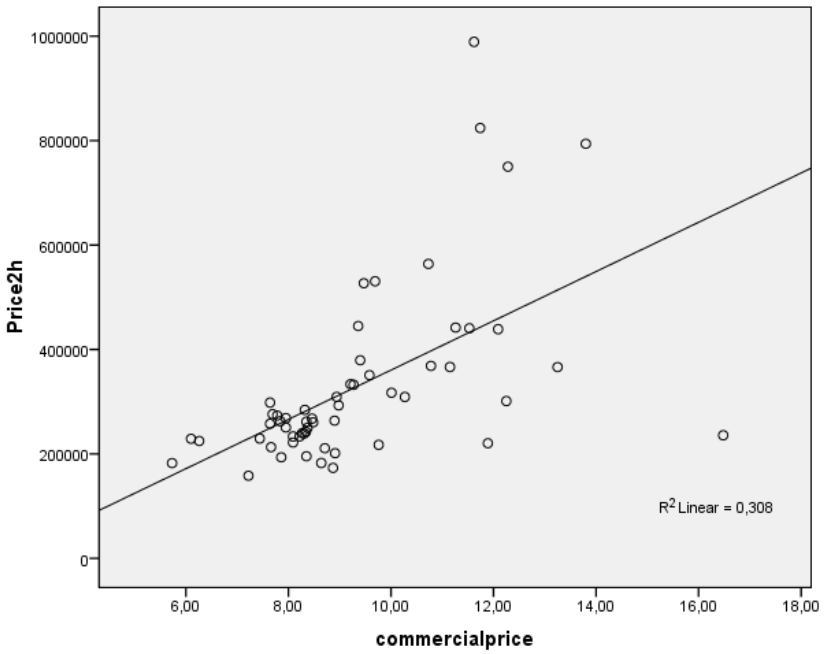
Model: $Price2h_i = \beta_1 + \beta_2 avgocuaption_{2i} + \beta_3 percincome_{3i} + \beta_4 commercialprice_{4i} + \beta_5 NForeigner_{5i} + \beta_6 Home_{6i} + u_i$

1. Relationship between endogenous and each of the explanatory variables

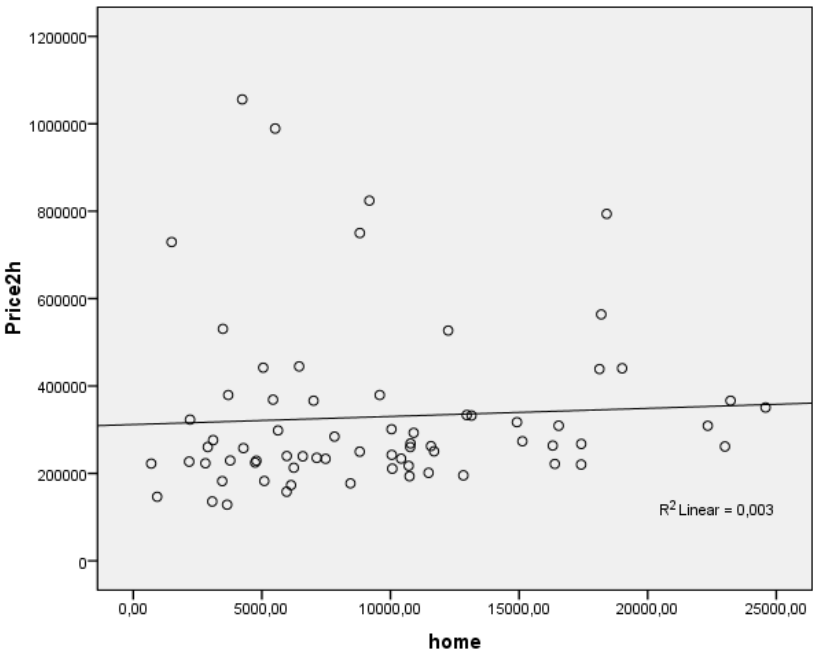
- Graph between the second-hand house prices and the percentage of income



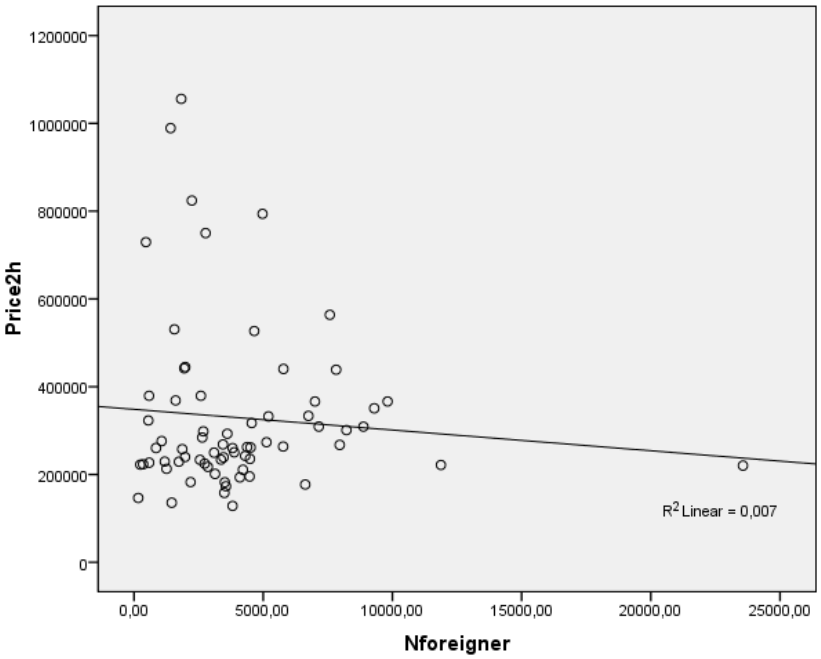
- Graph between the second-hand house prices and the rent price of commercial locals



- Graph between the second-hand house prices and the number of homes



- Graph between the second-hand house prices and the number of foreigners



2. Correlation matrix

- Analyze → Correlate → Bivariate
- Select the variables that we want to study
- Options→
  - Means and standard deviations
  - Missing values:
    - Exclude cases pariwise: not enter into the analysis of individuals who have lost some value to the variables being analyzed. The number of cases is different.
    - Exclude cases listwise: only they have lost some value in the variables under consideration, as it is in all. The number of cases is the same

Correlaciones

		Price2h	percincome	commercialprice	Nforeigner	home
Price2hab	Pearson Correlation	1	,986**	,555**	-,087	,058
	Sig. (bilateral)		,000	,000	,480	,636
	N	69	69	57	69	69
Percincome	Pearson Correlation	,986**	1	,566**	-,001	,175
	Sig. (bilateral)	,000		,000	,993	,138
	N	69	73	57	73	73
Commercialprice	Pearson Correlation	,555**	,566**	1	,308*	,264*
	Sig. (bilateral)	,000	,000		,020	,047
	N	57	57	57	57	57
Nforeigner	Pearson Correlation	-,087	-,001	,308*	1	,728**
	Sig. (bilateral)	,480	,993	,020		,000
	N	69	73	57	73	73
Home	Pearson Correlation	,058	,175	,264*	,728**	1
	Sig. (bilateral)	,636	,138	,047	,000	
	N	69	73	57	73	73

**. The correlation is significant at the level 0,01 (bilateral).

*. The correlation is significant at the level 0,05 (bilateral).

The correlation coefficient between the second-hand house prices and percincome is the highest of all and can explain the variation in endogenous.

Model: $Price2h_i = \beta_1 + \beta_2 percincome_{2i} + \beta_3 commercialprice_{3i} + \beta_4 NForeigner_{4i} + \beta_5 Home_{5i} + u_i$

3. The best specification for the proposed model

To transform the variables and get the logarithm and the reciprocal I use the *Transform menu - Calculate variable - Group of arithmetic functions*. Because different endogenous cannot choose the best specification based on the coefficient of determination, so we choose a model with endogenous linear and logarithmic form.

The best model is:

Lin-log (percincome, home linear) relation

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,986[a]	,971	,969	,05944

a. Predictors: (Constant), percincome, home, LNcommercialprice, LNNforeigner

The coefficient of determination is 0,971, which means that our model explains nearly all the variation in endogenous.

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1,569E12	4	3,923E11	441,180	,000[a]
	Residual	4,624E10	52	8,892E8		
	Total	1,615E12	56			

a. Predictors: (Constant), home, percincome, LNcommercialprice, LNNforeigner

$$\begin{cases} H_0: \beta_2 = \beta_3 = \beta_4 = 0 \\ H_1: \text{no } H_0 \end{cases}$$

The "p-value" in the ANOVA table is 0.000 which is less than the significance level ($\alpha = 0.05$) and therefore we reject the null hypothesis. Therefore, the parameters of the variables LNhome, LNNforeigner, LNcommercialprice and percincome are different from 0 and this means that the two variables are jointly significant.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-145584,359	84462,922		-1,724	,091
	LNcommercialprice	-6647,695	27944,504	-,008	-,238	,813
	LNNforeigner	8641,013	11940,438	,032	,724	,473
	Percincome	4751,397	158,205	1,002	30,033	,000
	Home	-2,287	1,236	-,076	-1,850	,070

a. Dependent Variable: Price2h

Model: $Price2h_i$= -145584,359 + 4751,397$percincome_{2i}$ - 6647,695$LNcommercialprice_{3i}$ + 8641,013$LNNForeigner_{4i}$ - 2,287$home_{5i}$ + u_i

If we make the contrast individual significance for each of the variables we obtain:

$$\begin{cases} H_0: \beta_2=0 \\ H_1: \beta_2\neq 0 \end{cases}$$

The "*p-value*" of the variable percincome is 0,000 and is less than significance level (α = 0,05), so we reject H_0. If we reject the null hypothesis, we can reject the value of the coefficient of the variable percincome is zero and therefore percincome variable is significant in explaining the variation of the endogenous variable.

$$\begin{cases} H_0: \beta_3=0 \\ H_1: \beta_3\neq 0 \end{cases}$$

The "*p-value*" of the variable LNcommercialprice is 0,813 and is higher than the significance level (α = 0.05), so we don't reject H_0. If we don't reject the null hypothesis, we cannot reject the value of the coefficient of the variable LNcommercialprice is zero and therefore LNommercialprice variable is not significant in explaining the variation of the endogenous variable.

$$\begin{cases} H_0: \beta_4=0 \\ H_1: \beta_4\neq 0 \end{cases}$$

The "*p-value*" of the variable LNNforeigner is 0,473 and is higher than the significance level ($\alpha = 0.05$), so we don't reject H_0. If we don't reject the null hypothesis, we cannot reject that the value of the coefficient of the variable LNNforeigner is zero and therefore LNNforeigner variable is not significant in explaining the variation of the endogenous variable.

$$\begin{cases} H_0: \beta_5=0 \\ H_1: \beta_5\neq 0 \end{cases}$$

The "*p-value*" of the variable home is 0,070 and is higher than the significance level ($\alpha = 0.05$), so we don't reject H_0. If we don't reject the null hypothesis, we cannot reject that the value of the coefficient of the variable Nforeigners is zero and therefore Nforeigners variable is not significant in explaining the variation of the endogenous variable.

4. Derivate and elasticity to determine the effect of X_j on Y

Statistics

		Price2h	Percincome	Nforeigner	commercialprice	home
N	Valid	69	73	73	57	73
	Missing	22	18	18	34	18
Mean		329447,36	90,4863	3831,8904	9,3198	9003,8082

PERCINCOME

$\frac{dY}{dX_2} = \beta_2 = 4751{,}397$; If there is an increase of 1 unit in the percentage of income the second-hand house prices increases by $4751{,}397$€.

$\varepsilon = \beta_2 * \frac{\overline{x_2}}{\bar{Y}} = 4751{,}397 * \frac{90{,}4863}{329447{,}36} = 1{,}31$; If there is an increase of 1% in the percentage of income, the second-hand house prices increases by $1{,}31\%$.

LNCOMMERCIALPRICE

$\frac{dY}{dX_3} = \beta_3 \frac{1}{\overline{x_3}} = -6647{,}695 * \frac{1}{9{,}3198} = -713{,}29$; If there is an increase of 1 unit in the rent price of commercial locals, the second-hand house prices decreases by $713{,}29$€.

$\varepsilon = \beta_3 * \frac{1}{\bar{Y}} = -6647{,}695 * \frac{1}{329447{,}36} = -0{,}02$; If there is an increase of 1% in the rent price of commercial locals, the second-hand house prices decreases by $0{,}02\%$.

LNNFOREIGNER

$\frac{dY}{dX_4} = \beta_4 \frac{1}{\overline{x_4}} = 8641{,}013 * \frac{1}{3831{,}8904} = 2{,}26$; If there is an increase of 1 unit in the number of foreigners, the second-hand house prices increases $2{,}26$ €.

$\varepsilon = \beta_4 * \frac{1}{\bar{Y}} = 8641{,}013 * \frac{1}{329447{,}36} = 0{,}026$; If there is an increase of 1% the number of foreigners, the second-hand house prices increases in $0{,}026$ %.

HOME

$\frac{dY}{dX_5} = \beta_5 = -2{,}29$; If there is an increase of 1 unit in the number of homes, the second-hand house prices decreases by $2{,}29€$.

$\varepsilon = \beta_5 \frac{\overline{x_5}}{\overline{Y}} = -2{,}287 * \frac{9003{,}8082}{329447{,}36} = -0{,}06$; If there is an increase of 1% in the number of homes, the second-hand house prices decreases by $0{,}06\%$.

5. Presence of atypical observations

Anayze – Regression– linear – Save (Mahalanobis distances, Cook's distance,Standardized residuals, Studentized residuals, Studentized deleted residuals)

MAH_1: Mahalanobis distances(di)
COO_1: Cook's distance
ZRE_1: Standardized residuals
SRE_1: Studentized residuals
SDR_1: Studentized deleted residuals

h_{ii} = (1+MAH_1)/n

$$\frac{1-\mathrm{di}}{\mathrm{N}} = \mathrm{h_{ii}} > 2\bar{\mathrm{h}} = 2\frac{\mathrm{k}}{\mathrm{n}}$$

$$\mathrm{d_i} > 2k - 1$$

Leverage

$$h_{ii} > 2\frac{k}{n} = 2 * \frac{5}{57} = 0{,}1754385964912281$$

The observations that present leverage are:

- Observation 1 el Raval: h_{ii} = 0,20009
- Observation 2 el Barri Gòtic: h_{ii} = 0,20418
- Observation 3 la Barceloneta: h_{ii} = 0,33517
- Observation 22. Vallvidrera, el Tibidabo and les Planes: h_{ii} = 0,23530
- Observation 24 les Tres Torres: h_{ii} = 0,27688
- Observation 55. Ciutat Meridiana: h_{ii} =0,20597
- Observation 58. Baró de Viver: h_{ii} = 0,30536
- Observation 60. Sant Andreu: h_{ii} = 0,23173

Analysis of Standardized residuals (residue >= 2 → Outlier):

- Observation 24. les Tres Torres: r = 2,67460
- Observation 59 : r = 2,08191
- Observation 67. la Vila Olímpica del Poblenou: r = -2,68545

Analysis of Studentized residuals (r >= tn-k → Outlier):

$$\mathrm{t_{n-k,\alpha}} = \mathrm{t_{52}} = 2{,}008$$

- Observation 24 les Tres Torres: r = 3,08088

- Observation 30. la Salut: r = -2,04413
- Observation 36. la Font d'en Fargues: r = -2,12074
- Observation 59. el Bon Pastor: r = 2,20295
- Observation 67. la Vila Olímpica del Poblenou: r =-2,81080

Analysis of Studentized deleted residuals (r >= tn-k-1 → Outlier):

$t_{n-k-1,\alpha} = t_{51} = 2{,}007$

- Observation 24 les Tres Torres: r = 3,32981
- Observation 30. la Salut: r = -2,10153
- Observation 36. la Font d'en Fargues: r = -2,18653
- Observation 59. el Bon Pastor: r = 2,27861
- Observation 67. la Vila Olímpica del Poblenou: r = -2,99116

Cook's distance (DC >= Fk, N-k →real influence):

$F_{k,n-k} = F_{5,52} = 2{,}39$

There are no observations with real influence.

6. Study of multicollinearity.

VIF: Analize – Regression–Linear – Statistics – Collinearity diagnostics

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	143490,316	77397,184		1,854	,069		
	Percincome	4454,257	157,672	1,013	28,250	,000	,544	1,839
	LNcommercialprice	-15750,962	29983,516	-,018	-,525	,601	,570	1,755
	LNNforeigner	17689,504	10436,744	,094	1,695	,095	,227	4,406
	LNhome	-37508,635	13232,857	-,157	-2,835	,006	,228	4,393

a. Dependent Variable: Price2h

None of the variables has a VIF higher than 10 therefore so none of them presents multicollinearity.

As we have seen, the only variable that explains the variation of the second-hand house prices is the variable percentage of income. From this analysis, let's the importance of the percentage of income from 2008 to 2011 and also interpret the signs of the elasticity (β).

2008

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,973[a]	,948	,943	,07437

a. Predictors: (Constant), LNhome, LNpercincome, LNcommercialprice, LNNforeigner

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5,097	4	1,274	230,406	,000[b]
	Residual	,282	51	,006		
	Total	5,379	55			

a. Predictors: (Constant), LNhome, LNpercincome, LNcommercialprice, LNNforeigner

b. Dependent Variable: LNPrice2hab

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	7,929	,229		34,700	,000
	LNpercincome	**1,030**	,051	,959	20,208	,000
	LNcommercialprice	,133	,077	,080	1,733	,089
	LNNforeigner	,058	,030	,118	1,954	,056
	LNhome	-,073	,032	-,121	-2,254	,029

a. Dependent Variable: LNPrice2hab

2009

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,974[a]	,950	,946	,08201

a. Predictors: (Constant), LNhome, LNpercincome, LNcommercialprice, LNNforeigner

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6,960	4	1,740	258,714	,000[b]
	Residual	,370	55	,007		
	Total	7,330	59			

a. Predictors: (Constant), LNhome, LNpercincome, LNcommercialprice, LNNforeigner

b. Dependent Variable: LNPrice2hab

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	7,869	,223		35,249	,000
	LNpercincome	**1,061**	,047	,992	22,456	,000
	LNcommercialprice	,008	,087	,004	,092	,927
	LNNforeigner	,056	,030	,108	1,877	,066
	LNhome	-,053	,034	-,083	-1,552	,127

a. Dependent Variable: LNPrice2hab

2010

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,972[a]	,944	,940	,09665

a. Predictors: (Constant), LNhome, LNpercincome, LNcommercialprice, LNNforeigner

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	9,457	4	2,364	253,124	,000[a]
	Residual	,560	60	,009		
	Total	10,018	64			

a. Predictors: (Constant), LNhome, LNpercincome, LNcommercialprice, LNNforeigner

b. Dependent Variable: LNPrice2hab

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	8,084	,201		40,293	,000
	LNpercincome	**1,080**	,047	,979	22,806	,000
	LNcommercialprice	,063	,084	,031	,752	,455
	LNNforeigner	,029	,030	,064	,987	,328
	LNhome	-,075	,038	-,130	-1,968	,054

a. Dependent Variable: LNPrice2hab

2011

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,985[a]	,970	,968	,07254

a. Predictors: (Constant), LNhome, LNpercincome, LNcommercialprice, LNNforeigner

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	8,863	4	2,216	421,088	,000[b]
	Residual	,274	52	,005		
	Total	9,136	56			

a. Predictors: (Constant), LNhome, LNpercincome, LNcommercialprice, LNNforeigner

b. Dependent Variable: LNPrice2hab

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	7,475	,196		38,222	,000
	LNpercincome	**1,180**	,041	,975	28,856	,000
	LNcommercialprice	,051	,068	,025	,749	,457
	LNNforeigner	-,003	,029	-,005	-,108	,914
	LNhome	-,025	,032	-,034	-,780	,439

a. Dependent Variable: LNPrice2hab

	β08	β09	β10	β11
(Constant)	7,929	7,869	8,084	7,475
LNpercincome	1,03	1,061	1,08	1,18
LNcommercialprice	0,133	0,008	0,063	0,051
LNNforeigner	0,058	0,056	0,029	-0,003
LNhome	-0,073	-0,053	-0,075	-0,025

βLNpercincome increases with age thus increasing income is relevant to explain the second-hand house prices. In 2010, despite being the smallest percentage, the value of β increases as the β of the percincome, LNcommercialprice and LNhome.

As for the signs of the variables, in the LNhome the beta is negative and in the others is positive except only in 2011 that it can be seen as negative LNNforeigner. In general, we can say that if the relationship is positive, meaning that an increase in second-hand house prices, it also increases it in the same direction and if the relationship is negative it does in the opposite direction.

Regarding the number of foreigners living in every neighborhood in Barcelona, we observed a decrease in 2011, becoming the 714,604 to 660,254, according to data released by the Catalan Institute of Statistics (Idescat) based in the official figures of the 2011 census. Community in South America has been experienced a greater number of dropouts, while citizens from Asian and African countries have been those that they have increased their presence in large city (see point 6 of the Annex).

Therefore, the negative relationship between the second-hand house prices and the number of foreign residents in Africa and Asia probably is because they have a low income looking for a price retail economy. However, the Americans' can afford to pay a high price because they supposedly have a higher income.

Countries	2008	2009	% (2008-2009)	2010	%(2009-2010)	2011	%(2010-2011)
Àsia	86041	95698	11,22%	100343	4,85%	114308	13,92%
Àfrica	169820	181035	6,60%	184852	2,11%	200653	8,55%
Amèrica	243850	260269	6,73%	296920	14,08%	273241	-7,97%
Oceania	323	341	5,57%	347	1,76%	405	16,71%
UE	142460	157403	10,49%	178184	13,20%	195672	9,81%
Resta UE	16575	18570	12,04%	18868	1,60%	21548	14,20%
TOTAL	866108	729750	-15,74%	714604	-2,08%	660254	-7,61%

CONCLUSION

In the data analysis that we have done in the first part, we found that Vallvidrera, el Tibidabo and les Planes, Pedralbes, Vallvidriera, Sarrià, les Tres Torres, Sant Gervasi-Bonanova and Sant Gervasi-Galvany are neighborhoods with people having a high income level and also expensive second-hand house prices. In the time series, we observed that the second-hand house prices have decreased from 2008 to 2009 due to the crisis started in United States that affected the rest of the countries and on the following years, these decrease is not as pronounced and in some cases, there is an increase.

When we proceed to make an econometric analysis starting from 2008 to 2011, we observed a high correlation between second-hand house prices and the percentage of income, as we could also see in dispersion graph. However, there are other variables that could explain the second-hand house prices but in the Open Data page of the City of Barcelona there is no information. In the analysis we found the best models that could explain the endogenous variable (the highest R^2 possible) and we saw that only the percentage of income was significant in the four years. It was necessary to prove if there were any atypical observations and if there was multicollinearity. The result was that none of the multiple linear regressions presented neither atypical observations and nor multicollinearity, so the regression (linear or logarithmic) was the best for the model. Taking a deeper analysis, we saw that the elasticity of the percentage of income (β) with respect to the second-hand house prices has increased over the four years, so the percentage of income has become more relevant to explain the endogenous variable. In order to prove it, it was necessary to make a logarithmic regression for each of the years, in order to see the evolution of the beta in each year. The relationship between the two variables was positive so, when there is an increase in the selling prices of the variable second-hand house prices, consequently, the variable percentage of income increases in the same direction.

Regarding the number of foreigners in each district we observed that there is a decline in the immigrant population due to the crisis and how this affects in the price of dependence on this variable. This decrease is reflected in the appearance of negative β variable N foreigners in 2011.This fact is due to the arrival of foreigners living in Africa and Asia, which probably had a low income and they were looking for cheap housing compared to the emigrants from America that they could afford paying a higher price because they might have a higher income.

BIBLIOGRAPHY/WEBGRAPHY

Joan Carles Martori. 2013. Econometric I notes.

Evolució del preu de venda. Dades en euros., *Servei de dades obertes de l'Ajuntament de Barcelona*. Accessed October 23, 2014 from http://opendata.bcn.cat/opendata/cataleg/HABITATGE/h2mave-totalt4b/

Ocupació mitjana de les llars., *Servei de dades obertes de l'Ajuntament de Barcelona*. Accessed October 23, 2014 from http://opendata.bcn.cat/opendata/ca/catalog/ext/DEMOGRAFIA/tllars-cll02/

Distribució territorial de la renda familiar a Barcelona., *Servei de dades obertes de l'Ajuntament de Barcelona*. Accessed October 23, 2014 from http://opendata.bcn.cat/opendata/cataleg/SOCIETAT_I_BENESTAR/rendafam-a/

El mercat immobiliari de Barcelona. Preus d'oferta dels locals comercials. Estimació del preu de lloguer mensual per barris. Sèrie anual 2008-2011., *Servei de dades obertes de l'Ajuntament de Barcelona*. Accessed October 23, 2014 from http://opendata.bcn.cat/opendata/ca/catalog/ext/COMER%C3%87/locllo-evolucio/

Nacionalitat de la població., *Servei de dades obertes de l'Ajuntament de Barcelona*. Accessed October 23, 2014 from http://opendata.bcn.cat/opendata/ca/catalog/NACIONALITAT

Estrangers amb autorització de residència. Per país de nacionalitat. Províncies., *Institut d'Estadística de Catalunya.* Accessed May 20, 2014 from http://www.idescat.cat/pub/?id=aec&n=272&t=2008&x=11&y=5

Estrangers amb autorització de residència. Per país de nacionalitat. Províncies., *Institut d'Estadística de Catalunya. Accessed* May 20*, 2014 from* http://www.idescat.cat/pub/?id=aec&n=272&t=2009&x=4&y=8

Estrangers amb autorització de residència. Per país de nacionalitat. Províncies., *Institut d'Estadística de Catalunya.* Accessed May 20, 2014 from http://www.idescat.cat/pub/?id=aec&n=272&t=2010&x=3&y=10

Estrangers amb autorització de residència. Per país de nacionalitat. Províncies., *Institut d'Estadística de Catalunya.* Accessed May 20, 2014 from http://www.idescat.cat/pub/?id=aec&n=272&t=2011

ANNEX

1. Second-hand house prices

. Evolució del preu de venda. Dades en euros						
Dte.	Barris	2011	2010	2009	2008	2007
BARCELONA		360.450	355.985	350.655	361.377	376.093
1	1. el Raval	220.321	230.700	239.854	263.938	291.041
1	2. el Barri Gòtic	366.317	332.350	331.285	362.011	384.963
1	3. la Barceloneta	235.651	247.763	219.778	252.204	289.774
1	4. Sant Pere, Santa Caterina i la Ribera	301.167	290.082	284.528	303.091	326.866
2	5. el Fort Pienc	333.517	365.141	384.073	405.810	429.219
2	6. la Sagrada Família	309.041	319.434	320.547	361.437	392.253
2	7. la Dreta de l'Eixample	563.813	490.640	475.542	470.338	498.776
2	8. l'Antiga Esquerra de l'Eixample	438.862	450.614	446.801	467.934	519.591
2	9. la Nova Esquerra de l'Eixample	350.846	389.895	371.041	410.658	430.970
2	10. Sant Antoni	309.157	321.499	362.286	385.852	411.671
3	11. el Poble Sec-AEI Parc Montjuïc	221.767	229.912	232.227	270.016	297.837
3	12. la Marina del Prat Vermell-AEI Zona Franca	--	--	--	--	--
3	13. la Marina de Port	262.529	279.081	298.856	314.469	354.241
3	14. la Font de la Guatlla	257.737	275.932	302.533	312.031	351.856
3	15. Hostafrancs	239.176	251.543	265.842	297.937	331.213
3	16. la Bordeta	233.361	264.983	265.075	302.322	334.715
3	17. Sants-Badal	242.361	263.547	275.063	300.624	335.814
3	18. Sants	267.502	261.086	279.252	306.148	337.654
4	19. les Corts	440.578	460.359	428.677	473.833	457.750
4	20. la Maternitat i Sant Ramon	379.352	409.351	426.305	469.421	455.483
4	21. Pedralbes	1.055.776	722.627	672.050	703.144	702.191
5	22. Vallvidrera, el Tibidabo i les Planes	729.465	709.638	729.886	713.281	566.104
5	23. Sarrià	750.074	747.942	687.405	684.680	703.623
5	24. les Tres Torres	989.115	1.008.620	988.339	1.012.598	1.003.422
5	25. Sant Gervasi-la Bonanova	824.155	782.472	720.832	726.935	765.001
5	26. Sant Gervasi-Galvany	793.875	795.482	769.602	778.335	773.954
5	27. el Putxet i el Farró	526.877	557.314	532.969	556.111	577.281
6	28. Vallcarca i els Penitents	444.842	332.132	352.950	379.221	387.547
6	29. el Coll	276.113	303.500	302.363	307.573	333.513
6	30. la Salut	368.622	341.815	342.974	356.792	393.664
6	31. la Vila de Gràcia	366.486	327.385	334.611	348.667	371.255
6	32. el Camp d'en Grassot i Gràcia Nova	317.206	333.739	337.849	351.172	392.878
7	33. el Baix Guinardó	292.945	310.751	306.959	337.499	350.006
7	34. Can Baró	229.455	239.963	265.700	294.335	289.514
7	35. el Guinardó	273.495	269.734	288.585	316.285	334.655
7	36. la Font d'en Fargues	379.245	307.438	314.484	340.997	350.844
7	37. el Carmel	195.440	208.153	217.071	245.455	265.787
7	38. la Teixonera	228.997	226.888	237.914	262.469	272.975
7	39. Sant Genís dels Agudells	260.325	242.589	242.329	275.326	287.333
7	40. Montbau	226.937	245.523	247.066	289.499	316.940
7	41. la Vall d'Hebron	323.072	325.907	318.311	317.153	339.126
7	42. la Clota	--	--	--	--	--
7	43. Horta	268.473	250.020	265.372	290.324	308.515
8	44. Vilapicina i la Torre Llobeta	233.733	240.662	253.396	282.671	318.254
8	45. Porta	210.882	230.230	239.281	272.808	295.097
8	46. el Turó de la Peira	173.195	200.682	207.627	239.279	267.148
8	47. Can Peguera	--	--	--	--	--
8	48. la Guineueta	212.954	224.122	244.962	276.346	283.565
8	49. Canyelles	223.311	238.718	235.998	269.520	302.415
8	50. les Roquetes	158.171	176.093	188.311	217.844	245.375
8	51. Verdun	182.611	185.081	190.013	216.806	243.568
8	52. la Prosperitat	193.524	203.066	215.608	247.540	273.580
8	53. la Trinitat Nova	135.683	155.495	182.472	199.357	233.089
8	54. Torre Baró	222.548	193.183	231.422	249.331	232.772
8	55. Ciutat Meridiana	128.492	146.733	179.913	217.291	232.856
8	56. Vallbona	--	--	--	--	--
9	57. la Trinitat Vella	182.390	186.565	224.037	250.711	272.569
9	58. Baró de Viver	146.575	172.770	206.136	240.287	201.654
9	59. el Bon Pastor	224.696	242.758	255.973	277.786	318.731

9	60. Sant Andreu	261.623	262.018	287.924	311.343	343.488
9	61. la Sagrera	250.524	270.468	275.529	303.426	344.892
9	62. el Congrés i els Indians	239.770	248.036	256.615	292.076	333.264
9	63. Navas	249.767	275.918	294.854	323.452	364.892
10	64. el Camp de l'Arpa del Clot	263.715	279.024	298.547	326.826	363.093
10	65. el Clot	260.315	294.300	298.720	317.200	348.398
10	66. el Parc i la Llacuna del Poblenou	298.280	328.291	367.644	382.610	396.047
10	67. la Vila Olímpica del Poblenou	530.659	439.923	461.109	457.303	489.475
10	68. el Poblenou	332.358	318.972	323.815	363.372	388.868
10	69. Diagonal Mar i el Front Marítim del Poblenou	441.905	422.962	414.209	420.803	466.459
10	70. el Besòs i el Maresme	177.197	200.622	212.279	267.146	284.869
10	71. Provençals del Poblenou	284.231	311.369	332.877	347.639	371.784
10	72. Sant Martí de Provençals	217.362	240.811	254.222	286.482	322.646
10	73. la Verneda i la Pau	201.354	218.607	233.328	273.265	313.438

2. Average of occuption per home and number of homes

1. Característiques de les llars per barris. Any 2008

2. Ocupació mitjana de les llars

Dte.	Barris	Població	Llars	Ocupació mitjana (persones per llar)
BARCELONA		1.628.090	650.646	2,5
1	1. el Raval	48.153	17.411	2,8
1	2. el Barri Gòtic	24.496	7.056	3,5
1	3. la Barceloneta	16.222	7.177	2,3
1	4. Sant Pere, Santa Caterina i la Ribera	22.988	10.017	2,3
2	5. el Fort Pienc	32.865	12.950	2,5
2	6. la Sagrada Família	53.010	22.295	2,4
2	7. la Dreta de l'Eixample	43.409	18.217	2,4
2	8. l'Antiga Esquerra de l'Eixample	41.964	18.186	2,3
2	9. la Nova Esquerra de l'Eixample	58.481	24.569	2,4
2	10. Sant Antoni	38.447	16.511	2,3
3	11. el Poble Sec - Parc Montjuïc	40.919	16.406	2,5
3	12. la Marina del Prat Vermell - Zona Franca	1.108	437	2,5
3	13. la Marina de Port	29.719	11.316	2,6
3	14. la Font de la Guatlla	10.145	4.187	2,4
3	15. Hostafrancs	15.984	6.528	2,4
3	16. la Bordeta	18.727	7.450	2,5
3	17. Sants – Badal	24.259	9.902	2,4
3	18. Sants	41.766	17.138	2,4
4	19. les Corts	47.549	18.831	2,5
4	20. la Maternitat i Sant Ramon	23.897	9.498	2,5
4	21. Pedralbes	11.528	4.147	2,8
5	22. Vallvidrera, el Tibidabo i les Planes	4.215	1.442	2,9
5	23. Sarrià	23.428	8.599	2,7
5	24. les Tres Torres	15.419	5.390	2,9
5	25. Sant Gervasi - la Bonanova	23.737	8.863	2,7
5	26. Sant Gervasi – Galvany	46.726	18.435	2,5
5	27. el Putxet i el Farró	30.003	12.058	2,5
6	28. Vallcarca i els Penitents	15.506	6.449	2,4
6	29. el Coll	7.272	3.052	2,4
6	30. la Salut	13.190	5.383	2,5
6	31. la Vila de Gràcia	52.301	23.109	2,3
6	32. el Camp d'en Grassot i Gràcia Nova	34.994	14.906	2,3
7	33. el Baix Guinardó	26.130	10.835	2,4
7	34. Can Baró	9.176	3.797	2,4
7	35. el Guinardó	35.375	14.833	2,4
7	36. la Font d'en Fargues	9.614	3.665	2,6
7	37. el Carmel	33.028	12.964	2,5
7	38. la Teixonera	11.421	4.560	2,5
7	39. Sant Genís dels Agudells	7.171	2.885	2,5
7	40. Montbau	5.156	2.129	2,4
7	41. la Vall d'Hebron	5.578	2.119	2,6
7	42. la Clota	456	183	2,5
7	43. Horta	27.730	10.705	2,6
8	44. Vilapicina i la Torre Llobeta	25.916	10.432	2,5
8	45. Porta	23.745	9.797	2,4
8	46. el Turó de la Peira	16.290	6.137	2,7
8	47. Can Peguera	2.137	862	2,5
8	48. la Guineueta	15.330	6.215	2,5
8	49. Canyelles	7.481	2.803	2,7
8	50. les Roquetes	16.133	5.939	2,7
8	51. Verdun	12.433	5.040	2,5
8	52. la Prosperitat	26.865	10.690	2,5
8	53. la Trinitat Nova	8.110	3.198	2,5
8	54. Torre Baró	2.153	690	3,1
8	55. Ciutat Meridiana	11.324	3.721	3,0
8	56. Vallbona	1.290	468	2,8
9	57. la Trinitat Vella	10.470	3.493	3,0
9	58. Baró de Viver	2.406	930	2,6
9	59. el Bon Pastor	13.474	4.736	2,8
9	60. Sant Andreu	55.353	22.313	2,5
9	61. la Sagrera	28.858	11.453	2,5
9	62. el Congrés i els Indians	14.067	5.952	2,4
9	63. Navas	21.676	8.687	2,5
10	64. el Camp de l'Arpa del Clot	38.852	16.275	2,4

10	65. el Clot	27.221	10.589	2,6
10	66. el Parc i la Llacuna del Poblenou	13.248	5.380	2,5
10	67. la Vila Olímpica del Poblenou	8.945	3.377	2,6
10	68. el Poblenou	30.949	12.535	2,5
10	69. Diagonal Mar i el Front Marítim del Poblenou	10.243	4.147	2,5
10	70. el Besòs i el Maresme	24.060	8.319	2,9
10	71. Provençals del Poblenou	18.933	7.362	2,6
10	72. Sant Martí de Provençals	26.263	10.645	2,5
10	73. la Verneda i la Pau	29.651	11.483	2,6
No consta		952	388	-

Departament d'Estadística

Font: Lectura del Padró Municipal d'Habitants a 30.06.2008. Departament d'Estadística. Ajuntament de Barcelona.

1. Característiques de les llars per barris. Any 2009

2. Ocupació mitjana de les llars

Dte.	Barris	Població	Llars	Ocupació mitjana (persones per llar)
BARCELONA		1.638.103	655.302	2,5
1	1. el Raval	49.315	17.539	2,8
1	2. el Barri Gòtic	21.045	7.101	3,0
1	3. la Barceloneta	16.351	7.233	2,3
1	4. Sant Pere, Santa Caterina i la Ribera	23.136	10.068	2,3
2	5. el Fort Pienc	33.202	13.038	2,5
2	6. la Sagrada Família	52.890	22.311	2,4
2	7. la Dreta de l'Eixample	43.609	18.287	2,4
2	8. l'Antiga Esquerra de l'Eixample	42.183	18.253	2,3
2	9. la Nova Esquerra de l'Eixample	58.559	24.570	2,4
2	10. Sant Antoni	38.742	16.554	2,3
3	11. el Poble Sec - Parc Montjuïc	41.018	16.436	2,5
3	12. la Marina del Prat Vermell - Zona Franca	1.085	424	2,6
3	13. la Marina de Port	30.128	11.453	2,6
3	14. la Font de la Guatlla	10.336	4.249	2,4
3	15. Hostafrancs	16.208	6.573	2,5
3	16. la Bordeta	18.823	7.486	2,5
3	17. Sants – Badal	24.507	9.972	2,5
3	18. Sants	42.438	17.286	2,5
4	19. les Corts	47.664	18.934	2,5
4	20. la Maternitat i Sant Ramon	23.954	9.544	2,5
4	21. Pedralbes	11.650	4.223	2,8
5	22. Vallvidrera, el Tibidabo i les Planes	4.295	1.454	3,0
5	23. Sarrià	23.802	8.704	2,7
5	24. les Tres Torres	15.832	5.510	2,9
5	25. Sant Gervasi - la Bonanova	24.270	9.075	2,7
5	26. Sant Gervasi – Galvany	46.829	18.461	2,5
5	27. el Putxet i el Farró	30.461	12.242	2,5
6	28. Vallcarca i els Penitents	15.687	6.510	2,4
6	29. el Coll	7.299	3.069	2,4
6	30. la Salut	13.332	5.436	2,5
6	31. la Vila de Gràcia	52.801	23.141	2,3
6	32. el Camp d'en Grassot i Gràcia Nova	34.838	14.900	2,3
7	33. el Baix Guinardó	26.287	10.894	2,4
7	34. Can Baró	9.159	3.774	2,4
7	35. el Guinardó	35.836	15.039	2,4
7	36. la Font d'en Fargues	9.608	3.686	2,6
7	37. el Carmel	33.081	13.008	2,5
7	38. la Teixonera	11.494	4.592	2,5
7	39. Sant Genís dels Agudells	7.228	2.937	2,5
7	40. Montbau	5.261	2.165	2,4
7	41. la Vall d'Hebron	5.618	2.164	2,6
7	42. la Clota	480	184	2,6
7	43. Horta	27.909	10.758	2,6
8	44. Vilapicina i la Torre Llobeta	25.957	10.468	2,5
8	45. Porta	23.993	9.899	2,4
8	46. el Turó de la Peira	16.593	6.167	2,7
8	47. Can Peguera	2.210	911	2,4
8	48. la Guineueta	15.411	6.237	2,5
8	49. Canyelles	7.359	2.802	2,6
8	50. les Roquetes	16.233	5.969	2,7
8	51. Verdun	12.418	5.059	2,5
8	52. la Prosperitat	26.848	10.700	2,5
8	53. la Trinitat Nova	8.070	3.147	2,6
8	54. Torre Baró	2.200	700	3,1
8	55. Ciutat Meridiana	11.355	3.703	3,1
8	56. Vallbona	1.314	479	2,7
9	57. la Trinitat Vella	10.574	3.495	3,0
9	58. Baró de Viver	2.372	943	2,5
9	59. el Bon Pastor	13.808	4.768	2,9
9	60. Sant Andreu	55.813	22.567	2,5
9	61. la Sagrera	29.002	11.559	2,5
9	62. el Congrés i els Indians	14.111	5.949	2,4
9	63. Navas	21.858	8.772	2,5
10	64. el Camp de l'Arpa del Clot	38.917	16.373	2,4
10	65. el Clot	27.562	10.732	2,6
10	66. el Parc i la Llacuna del Poblenou	13.457	5.478	2,5

10	67. la Vila Olímpica del Poblenou	9.202	3.443	2,7
10	68. el Poblenou	31.433	12.713	2,5
10	69. Diagonal Mar i el Front Marítim del Poblenou	11.132	4.559	2,4
10	70. el Besòs i el Maresme	24.527	8.416	2,9
10	71. Provençals del Poblenou	19.542	7.618	2,6
10	72. Sant Martí de Provençals	26.457	10.689	2,5
10	73. la Verneda i la Pau	29.626	11.517	2,6
No consta		499	233	-

Departament d'Estadística

Fuente: Lectura de Padrón Municipal de Habitants a junio 2009. Departament d'Estadística. Ajuntament de Barcelona.

Dte.	Barris	Població	Llars	Ocupació mitjana (persones per llar)
BARCELONA		1.630.494	658.622	2,5
1	1. el Raval	48.767	17.608	2,8
1	2. el Barri Gòtic	18.720	7.128	2,6
1	3. la Barceloneta	16.261	7.243	2,2
1	4. Sant Pere, Santa Caterina i la Ribera	23.101	10.170	2,3
2	5. el Fort Pienc	32.900	13.046	2,5
2	6. la Sagrada Família	52.424	22.353	2,3
2	7. la Dreta de l'Eixample	43.473	18.330	2,4
2	8. l'Antiga Esquerra de l'Eixample	42.076	18.257	2,3
2	9. la Nova Esquerra de l'Eixample	58.247	24.684	2,4
2	10. Sant Antoni	38.414	16.584	2,3
3	11. el Poble Sec - Parc Montjuïc	41.138	16.445	2,5
3	12. la Marina del Prat Vermell - Zona Franca	1.069	426	2,5
3	13. la Marina de Port	30.134	11.550	2,6
3	14. la Font de la Guatlla	10.310	4.293	2,4
3	15. Hostafrancs	16.062	6.600	2,4
3	16. la Bordeta	18.519	7.481	2,5
3	17. Sants - Badal	24.470	10.028	2,4
3	18. Sants	42.568	17.476	2,4
4	19. les Corts	47.635	19.049	2,5
4	20. la Maternitat i Sant Ramon	23.818	9.583	2,5
4	21. Pedralbes	11.758	4.276	2,7
5	22. Vallvidrera, el Tibidabo i les Planes	4.340	1.485	2,9
5	23. Sarrià	24.028	8.837	2,7
5	24. les Tres Torres	15.807	5.550	2,8
5	25. Sant Gervasi - la Bonanova	24.307	9.158	2,7
5	26. Sant Gervasi - Galvany	46.478	18.493	2,5
5	27. el Putxet i el Farró	30.566	12.312	2,5
6	28. Vallcarca i els Penitents	15.436	6.470	2,4
6	29. el Coll	7.271	3.089	2,4
6	30. la Salut	13.267	5.430	2,4
6	31. la Vila de Gràcia	52.586	23.340	2,3
6	32. el Camp d'en Grassot i Gràcia Nova	34.681	14.945	2,3
7	33. el Baix Guinardó	26.123	10.912	2,4
7	34. Can Baró	9.034	3.785	2,4
7	35. el Guinardó	35.803	15.103	2,4
7	36. la Font d'en Fargues	9.585	3.695	2,6
7	37. el Carmel	32.753	13.005	2,5
7	38. la Teixonera	11.481	4.646	2,5
7	39. Sant Genís dels Agudells	7.060	2.915	2,4
7	40. Montbau	5.199	2.164	2,4
7	41. la Vall d'Hebron	5.630	2.220	2,5
7	42. la Clota	451	183	2,5
7	43. Horta	27.825	10.804	2,6
8	44. Vilapicina i la Torre Llobeta	25.666	10.443	2,5
8	45. Porta	23.809	9.939	2,4
8	46. el Turó de la Peira	16.932	6.255	2,7
8	47. Can Peguera	2.250	916	2,5
8	48. la Guineueta	15.268	6.242	2,4
8	49. Canyelles	7.322	2.808	2,6
8	50. les Roquetes	16.178	5.996	2,7
8	51. Verdun	12.398	5.094	2,4
8	52. la Prosperitat	26.749	10.752	2,5
8	53. la Trinitat Nova	7.815	3.099	2,5
8	54. Torre Baró	2.166	698	3,1
8	55. Ciutat Meridiana	11.121	3.670	3,0
8	56. Vallbona	1.342	483	2,8
9	57. la Trinitat Vella	10.544	3.475	3,0
9	58. Baró de Viver	2.353	933	2,5
9	59. el Bon Pastor	13.846	4.764	2,9
9	60. Sant Andreu	55.813	22.854	2,4
9	61. la Sagrera	29.117	11.663	2,5
9	62. el Congrés i els Indians	13.977	5.944	2,4
9	63. Navas	21.699	8.808	2,5
10	64. el Camp de l'Arpa del Clot	38.399	16.363	2,3
10	65. el Clot	27.505	10.794	2,5
10	66. el Parc i la Llacuna del Poblenou	13.728	5.569	2,5
10	67. la Vila Olímpica del Poblenou	9.275	3.497	2,7
10	68. el Poblenou	31.961	12.987	2,5
10	69. Diagonal Mar i el Front Marítim del Poblenou	11.730	4.915	2,4
10	70. el Besòs i el Maresme	24.403	8.443	2,9

10	71. Provençals del Poblenou	19.636	7.781	2,5
10	72. Sant Martí de Provençals	26.281	10.689	2,5
10	73. la Verneda i la Pau	29.385	11.501	2,6
No consta		251	96	-

Departament d'Estadística

Font: Lectura de Padrón Municipal de Habitants a junio 2010. Departament d'Estadística. Ajuntament de Barcelona.

1. Característiques de les llars per barris. Any 2011
2. Ocupació mitjana de les llars

Dte.	Barris	Població	Llars	Ocupació mitjana (persones per llar)
BARCELONA		1.615.985	657.278	2,5
1	1. el Raval	48.485	17.413	2,8
1	2. el Barri Gòtic	17.257	7.012	2,5
1	3. la Barceloneta	15.674	7.134	2,2
1	4. Sant Pere, Santa Caterina i la Ribera	22.632	10.043	2,3
2	5. el Fort Pienc	32.348	12.965	2,5
2	6. la Sagrada Família	52.000	22.336	2,3
2	7. la Dreta de l'Eixample	43.206	18.194	2,4
2	8. l'Antiga Esquerra de l'Eixample	41.653	18.125	2,3
2	9. la Nova Esquerra de l'Eixample	57.659	24.582	2,3
2	10. Sant Antoni	38.130	16.540	2,3
3	11. el Poble Sec - Parc Montjuïc	40.704	16.389	2,5
3	12. la Marina del Prat Vermell - Zona Franca	1.065	427	2,5
3	13. la Marina de Port	30.290	11.574	2,6
3	14. la Font de la Guatlla	10.222	4.283	2,4
3	15. Hostafrancs	15.955	6.591	2,4
3	16. la Bordeta	18.431	7.479	2,5
3	17. Sants – Badal	24.431	10.051	2,4
3	18. Sants	41.666	17.418	2,4
4	19. les Corts	46.953	19.006	2,5
4	20. la Maternitat i Sant Ramon	23.758	9.583	2,5
4	21. Pedralbes	11.629	4.238	2,7
5	22. Vallvidrera, el Tibidabo i les Planes	4.355	1.494	2,9
5	23. Sarrià	24.153	8.810	2,7
5	24. les Tres Torres	15.700	5.518	2,8
5	25. Sant Gervasi - la Bonanova	24.432	9.180	2,7
5	26. Sant Gervasi - Galvany	46.207	18.405	2,5
5	27. el Putxet i el Farró	29.941	12.245	2,4
6	28. Vallcarca i els Penitents	15.396	6.450	2,4
6	29. el Coll	7.296	3.104	2,4
6	30. la Salut	13.199	5.434	2,4
6	31. la Vila de Gràcia	51.037	23.220	2,2
6	32. el Camp d'en Grassot i Gràcia Nova	34.497	14.916	2,3
7	33. el Baix Guinardó	25.972	10.904	2,4
7	34. Can Baró	8.984	3.771	2,4
7	35. el Guinardó	35.673	15.129	2,4
7	36. la Font d'en Fargues	9.495	3.694	2,6
7	37. el Carmel	32.425	12.834	2,5
7	38. la Teixonera	11.420	4.786	2,4
7	39. Sant Genís dels Agudells	6.977	2.897	2,4
7	40. Montbau	5.191	2.175	2,4
7	41. la Vall d'Hebron	5.580	2.208	2,5
7	42. la Clota	472	182	2,6
7	43. Horta	27.312	10.781	2,5
8	44. Vilapicina i la Torre Llobeta	25.515	10.415	2,4
8	45. Porta	24.909	10.072	2,5
8	46. el Turó de la Peira	15.270	6.136	2,5
8	47. Can Peguera	2.249	927	2,4
8	48. la Guineueta	15.294	6.242	2,5
8	49. Canyelles	7.170	2.807	2,6
8	50. les Roquetes	16.050	5.964	2,7
8	51. Verdun	12.396	5.095	2,4
8	52. la Prosperitat	26.594	10.741	2,5
8	53. la Trinitat Nova	7.682	3.071	2,5
8	54. Torre Baró	2.193	700	3,1
8	55. Ciutat Meridiana	10.832	3.650	3,0
8	56. Vallbona	1.381	481	2,9
9	57. la Trinitat Vella	10.372	3.461	3,0
9	58. Baró de Viver	2.343	932	2,5
9	59. el Bon Pastor	13.374	4.740	2,8
9	60. Sant Andreu	55.902	23.003	2,4
9	61. la Sagrera	29.136	11.695	2,5
9	62. el Congrés i els Indians	14.063	5.969	2,4
9	63. Navas	21.758	8.805	2,5
10	64. el Camp de l'Arpa del Clot	37.957	16.308	2,3
10	65. el Clot	27.114	10.769	2,5
10	66. el Parc i la Llacuna del Poblenou	13.772	5.627	2,4
10	67. la Vila Olímpica del Poblenou	9.191	3.486	2,6
10	68. el Poblenou	32.208	13.151	2,4
10	69. Diagonal Mar i el Front Marítim del Poblenou	12.289	5.053	2,4
10	70. el Besòs i el Maresme	23.998	8.445	2,8

10	71. Provençals del Poblenou	19.732	7.823	2,5
10	72. Sant Martí de Provençals	26.178	10.707	2,4
10	73. la Verneda i la Pau	29.131	11.483	2,5
No consta		70	0	-

Departament d'Estadística

Font: Lectura del Padró Municipal d'Habitants a juny 2011. Departament d'Estadística. Ajuntament de Barcelona.

3. Percentage of income

1. Distribució territorial de la renda familiar a Barcelona

1. Any 2008

Dte.	Barris	Població resident	Índex RFD Barcelona = 100
BARCELONA		1.615.908	100,0
1	1. el Raval	47.431	62,6
1	2. el Barri Gòtic	25.556	80,8
1	3. la Barceloneta	16.000	65,9
1	4. Sant Pere, Santa Caterina i la Ribera	22.649	81,8
2	5. el Fort Pienc	32.167	108,3
2	6. la Sagrada Família	52.593	100,7
2	7. la Dreta de l'Eixample	42.793	138,0
2	8. l'Antiga Esquerra de l'Eixample	41.654	122,8
2	9. la Nova Esquerra de l'Eixample	58.412	116,6
2	10. Sant Antoni	38.247	102,9
3	11. el Poble Sec - AEI Parc de Montjuïc	40.381	70,8
3	12. la Marina del Prat Vermell - AEI Zona Franca	1.226	77,2
3	13. la Marina de Port	29.618	77,4
3	14. la Font de la Guatlla	10.181	91,7
3	15. Hostafrancs	15.871	82,5
3	16. la Bordeta	18.601	80,8
3	17. Sants – Badal	24.274	84,5
3	18. Sants	41.280	87,1
4	19. les Corts	47.101	131,7
4	20. la Maternitat i Sant Ramon	23.845	129,8
4	21. Pedralbes	11.543	194,7
5	22. Vallvidrera, el Tibidabo i les Planes	4.153	165,6
5	23. Sarrià	23.348	172,4
5	24. les Tres Torres	15.410	214,7
5	25. Sant Gervasi - la Bonanova	23.713	177,5
5	26. Sant Gervasi - Galvany	46.517	187,1
5	27. el Putxet i el Farró	29.524	149,1
6	28. Vallcarca i els Penitents	15.458	111,9
6	29. el Coll	7.307	90,2
6	30. la Salut	13.166	111,0
6	31. la Vila de Gràcia	51.426	100,7
6	32. el Camp d'en Grassot i Gràcia Nova	34.731	102,6
7	33. el Baix Guinardó	26.012	96,4
7	34. Can Baró	9.084	83,7
7	35. el Guinardó	35.157	92,2
7	36. la Font d'en Fargues	9.638	107,7
7	37. el Carmel	32.879	69,3
7	38. la Teixonera	11.398	73,2
7	39. Sant Genís dels Agudells	7.140	86,8
7	40. Montbau	5.179	88,6
7	41. la Vall d'Hebron	5.556	98,0
7	42. la Clota	462	90,5
7	43. Horta	27.922	87,5
8	44. Vilapicina i la Torre Llobeta	25.271	81,7
8	45. Porta	23.603	74,2
8	46. el Turó de la Peira	15.848	65,0
8	47. Can Peguera	2.155	52,8
8	48. la Guineueta	15.426	82,0
8	49. Canyelles	7.482	75,4
8	50. les Roquetes	15.970	60,3
8	51. Verdun	12.400	61,9
8	52. la Prosperitat	26.637	72,5
8	53. la Trinitat Nova	8.056	52,5
8	54. Torre Baró	2.120	62,1
8	55. Ciutat Meridiana	11.145	58,8
8	56. Vallbona	1.320	59,6
9	57. la Trinitat Vella	10.237	76,4
9	58. Baró de Viver	2.452	49,9
9	59. el Bon Pastor	12.990	64,8
9	60. Sant Andreu	55.638	84,1
9	61. la Sagrera	28.734	85,3
9	62. el Congrés i els Indians	13.820	83,6
9	63. Navas	21.572	91,0
10	64. el Camp de l'Arpa del Clot	38.738	92,4

10	65. el Clot	27.121	89,0
10	66. el Parc i la Llacuna del Poblenou	13.175	106,2
10	67. la Vila Olímpica del Poblenou	8.935	133,3
10	68. el Poblenou	30.624	93,6
10	69. Diagonal Mar i el Front Marítim del Poblenou	9.921	104,4
10	70. el Besòs i el Maresme	23.557	61,1
10	71. Provençals del Poblenou	18.556	85,1
10	72. Sant Martí de Provençals	26.199	80,3
10	73. la Verneda i la Pau	29.603	74,3

Nota: Estimació de la població resident a 1 de gener de 2008.
Departament d'Estadística. Ajuntament de Barcelona.
Font: "Distribució territorial de la Renda Familiar a Barcelona" Barcelona Economia. Ajuntament de Barcelona.

1. Distribució territorial de la renda familiar a Barcelona

2. Any 2009

Dte.	Barris	Població	Índex RFD Barcelona = 100
BARCELONA		1.638.103	100,0
1	1. el Raval	49.315	62,0
1	2. el Barri Gòtic	21.045	94,3
1	3. la Barceloneta	16.351	64,4
1	4. Sant Pere, Santa Caterina i la Ribera	23.136	88,8
2	5. el Fort Pienc	33.202	109,1
2	6. la Sagrada Família	52.890	98,4
2	7. la Dreta de l'Eixample	43.609	143,6
2	8. l'Antiga Esquerra de l'Eixample	42.183	122,6
2	9. la Nova Esquerra de l'Eixample	58.559	114,3
2	10. Sant Antoni	38.742	99,5
3	11. el Poble Sec - AEI Parc de Montjuïc	41.018	68,7
3	12. la Marina del Prat Vermell - AEI Zona Franca	1.085	74,2
3	13. la Marina de Port	30.128	75,6
3	14. la Font de la Guatlla	10.336	87,2
3	15. Hostafrancs	16.208	81,7
3	16. la Bordeta	18.823	77,4
3	17. Sants - Badal	24.507	81,4
3	18. Sants	42.438	85,3
4	19. les Corts	47.664	128,9
4	20. la Maternitat i Sant Ramon	23.954	128,1
4	21. Pedralbes	11.650	198,3
5	22. Vallvidrera, el Tibidabo i les Planes	4.295	172,2
5	23. Sarrià	23.802	176,1
5	24. les Tres Torres	15.832	222,6
5	25. Sant Gervasi - la Bonanova	24.270	184,5
5	26. Sant Gervasi - Galvany	46.829	195,1
5	27. el Putxet i el Farró	30.461	147,7
6	28. Vallcarca i els Penitents	15.687	111,9
6	29. el Coll	7.299	89,7
6	30. la Salut	13.332	110,1
6	31. la Vila de Gràcia	52.801	98,8
6	32. el Camp d'en Grassot i Gràcia Nova	34.838	101,7
7	33. el Baix Guinardó	26.287	92,8
7	34. Can Baró	9.159	81,9
7	35. el Guinardó	35.836	87,8
7	36. la Font d'en Fargues	9.608	107,7
7	37. el Carmel	33.081	64,9
7	38. la Teixonera	11.494	73,1
7	39. Sant Genís dels Agudells	7.228	80,5
7	40. Montbau	5.261	80,0
7	41. la Vall d'Hebron	5.618	98,0
7	42. la Clota	480	94,6
7	43. Horta	27.909	82,1
8	44. Vilapicina i la Torre Llobeta	25.957	80,1
8	45. Porta	23.993	70,2
8	46. el Turó de la Peira	16.593	57,8
8	47. Can Peguera	2.210	43,3
8	48. la Guineueta	15.411	76,9
8	49. Canyelles	7.359	70,9
8	50. les Roquetes	16.233	55,0
8	51. Verdun	12.418	57,2
8	52. la Prosperitat	26.848	66,7
8	53. la Trinitat Nova	8.070	51,5
8	54. Torre Baró	2.200	65,6
8	55. Ciutat Meridiana	11.355	53,9
8	56. Vallbona	1.314	61,2
9	57. la Trinitat Vella	10.574	69,9
9	58. Baró de Viver	2.372	44,3
9	59. el Bon Pastor	13.808	57,1
9	60. Sant Andreu	55.813	82,1
9	61. la Sagrera	29.002	81,2
9	62. el Congrés i els Indians	14.111	78,6
9	63. Navas	21.858	86,9
10	64. el Camp de l'Arpa del Clot	38.917	89,2
10	65. el Clot	27.562	85,5
10	66. el Parc i la Llacuna del Poblenou	13.457	103,1

10	67. la Vila Olímpica del Poblenou	9.202	141,1
10	68. el Poblenou	31.433	86,5
10	69. Diagonal Mar i el Front Marítim del Poblenou	11.132	107,9
10	70. el Besòs i el Maresme	24.527	53,7
10	71. Provençals del Poblenou	19.542	82,4
10	72. Sant Martí de Provençals	26.457	76,6
10	73. la Verneda i la Pau	29.626	67,8
No consta		499	

Departament d'Estadística. Ajuntament de Barcelona.
Font: Lectura del Padró Municipal d'Habitants, 30 de juny 2009.
"Distribució territorial de la Renda Familiar a Barcelona", Barcelona Economia, Gabinet Tècnic de Programació. Ajuntament de Barcelona.

1. Distribució territorial de la renda familiar a Barcelona

3. Any 2010

Dte.	Barris	Població	Índex RFD Barcelona = 100
BARCELONA		1.630.494	100,0
1	1. el Raval	48.767	62,0
1	2. el Barri Gòtic	18.720	92,3
1	3. la Barceloneta	16.261	72,6
1	4. Sant Pere, Santa Caterina i la Ribera	23.101	91,2
2	5. el Fort Pienc	32.900	108,5
2	6. la Sagrada Família	52.424	97,3
2	7. la Dreta de l'Eixample	43.473	144,1
2	8. l'Antiga Esquerra de l'Eixample	42.076	125,9
2	9. la Nova Esquerra de l'Eixample	58.247	115,2
2	10. Sant Antoni	38.414	95,4
3	11. el Poble Sec - AEI Parc de Montjuïc	41.138	66,6
3	12. la Marina del Prat Vermell - AEI Zona Franca	1.069	61,9
3	13. la Marina de Port	30.134	74,4
3	14. la Font de la Guatlla	10.310	82,4
3	15. Hostafrancs	16.062	77,9
3	16. la Bordeta	18.519	73,4
3	17. Sants - Badal	24.470	78,5
3	18. Sants	42.568	84,4
4	19. les Corts	47.635	131,7
4	20. la Maternitat i Sant Ramon	23.818	125,3
4	21. Pedralbes	11.758	208,4
5	22. Vallvidrera, el Tibidabo i les Planes	4.340	161,9
5	23. Sarrià	24.028	177,8
5	24. les Tres Torres	15.807	225,8
5	25. Sant Gervasi - la Bonanova	24.307	189,5
5	26. Sant Gervasi - Galvany	46.478	201,1
5	27. el Putxet i el Farró	30.566	150,5
6	28. Vallcarca i els Penitents	15.436	104,9
6	29. el Coll	7.271	89,0
6	30. la Salut	13.267	111,7
6	31. la Vila de Gràcia	52.586	102,8
6	32. el Camp d'en Grassot i Gràcia Nova	34.681	100,0
7	33. el Baix Guinardó	26.123	94,9
7	34. Can Baró	9.034	75,3
7	35. el Guinardó	35.803	82,5
7	36. la Font d'en Fargues	9.585	104,4
7	37. el Carmel	32.753	65,8
7	38. la Teixonera	11.481	69,5
7	39. Sant Genís dels Agudells	7.060	81,4
7	40. Montbau	5.199	82,2
7	41. la Vall d'Hebron	5.630	93,0
7	42. la Clota	451	81,4
7	43. Horta	27.825	78,2
8	44. Vilapicina i la Torre Llobeta	25.666	80,4
8	45. Porta	23.809	70,7
8	46. el Turó de la Peira	16.932	54,0
8	47. Can Peguera	2.250	38,4
8	48. la Guineueta	15.268	71,5
8	49. Canyelles	7.322	75,4
8	50. les Roquetes	16.178	53,3
8	51. Verdun	12.398	55,0
8	52. la Prosperitat	26.749	61,5
8	53. la Trinitat Nova	7.815	45,8
8	54. Torre Baró	2.166	56,9
8	55. Ciutat Meridiana	11.121	49,7
8	56. Vallbona	1.342	48,2
9	57. la Trinitat Vella	10.544	58,1
9	58. Baró de Viver	2.353	39,4
9	59. el Bon Pastor	13.846	51,8
9	60. Sant Andreu	55.813	78,6
9	61. la Sagrera	29.117	80,4
9	62. el Congrés i els Indians	13.977	76,0
9	63. Navas	21.699	81,4
10	64. el Camp de l'Arpa del Clot	38.399	84,6
10	65. el Clot	27.505	82,8
10	66. el Parc i la Llacuna del Poblenou	13.728	97,3

10 67. la Vila Olímpica del Poblenou	9.275	134,9
10 68. el Poblenou	31.961	86,3
10 69. Diagonal Mar i el Front Marítim del Poblenou	11.730	106,8
10 70. el Besòs i el Maresme	24.403	53,6
10 71. Provençals del Poblenou	19.636	77,1
10 72. Sant Martí de Provençals	26.281	74,9
10 73. la Verneda i la Pau	29.385	68,4
No consta	251	

Departament d'Estadística. Ajuntament de Barcelona.
Font: Lectura del Padró Municipal d'Habitants, 30 de juny 2010.
"Distribució territorial de la Renda Familiar a Barcelona", Barcelona Economia, Gabinet Tècnic de Programació. Ajuntament de Barcelona.

1. Distribució territorial de la renda familiar a Barcelona

4. Any 2011

Dte.	Barris	Població	Índex RFD Barcelona = 100
BARCELONA		1.615.985	100,0
1	1. el Raval	48.485	65,0
1	2. el Barri Gòtic	17.257	98,8
1	3. la Barceloneta	15.674	73,1
1	4. Sant Pere, Santa Caterina i la Ribera	22.632	86,1
2	5. el Fort Pienc	32.348	97,9
2	6. la Sagrada Família	52.000	96,1
2	7. la Dreta de l'Eixample	43.206	151,7
2	8. l'Antiga Esquerra de l'Eixample	41.653	121,3
2	9. la Nova Esquerra de l'Eixample	57.659	107,7
2	10. Sant Antoni	38.130	95,9
3	11. el Poble Sec - AEI Parc de Montjuïc	40.704	73,0
3	12. la Marina del Prat Vermell - AEI Zona Franca	1.065	53,0
3	13. la Marina de Port	30.290	70,8
3	14. la Font de la Guatlla	10.222	74,6
3	15. Hostafrancs	15.955	76,1
3	16. la Bordeta	18.431	71,1
3	17. Sants - Badal	24.431	77,1
3	18. Sants	41.666	86,4
4	19. les Corts	46.953	126,9
4	20. la Maternitat i Sant Ramon	23.758	110,6
4	21. Pedralbes	11.629	246,0
5	22. Vallvidrera, el Tibidabo i les Planes	4.355	165,9
5	23. Sarrià	24.153	180,7
5	24. les Tres Torres	15.700	216,4
5	25. Sant Gervasi - la Bonanova	24.432	190,7
5	26. Sant Gervasi – Galvany	46.207	177,7
5	27. el Putxet i el Farró	29.941	138,0
6	28. Vallcarca i els Penitents	15.396	114,4
6	29. el Coll	7.296	97,3
6	30. la Salut	13.199	109,8
6	31. la Vila de Gràcia	51.037	106,4
6	32. el Camp d'en Grassot i Gràcia Nova	34.497	98,2
7	33. el Baix Guinardó	25.972	89,9
7	34. Can Baró	8.984	74,4
7	35. el Guinardó	35.673	85,8
7	36. la Font d'en Fargues	9.495	97,0
7	37. el Carmel	32.425	62,4
7	38. la Teixonera	11.420	69,0
7	39. Sant Genís dels Agudells	6.977	81,2
7	40. Montbau	5.191	71,1
7	41. la Vall d'Hebron	5.580	89,1
7	42. la Clota	472	79,5
7	43. Horta	27.312	78,2
8	44. Vilapicina i la Torre Llobeta	25.515	72,3
8	45. Porta	24.909	63,9
8	46. el Turó de la Peira	15.270	58,6
8	47. Can Peguera	2.249	52,7
8	48. la Guineueta	15.294	58,9
8	49. Canyelles	7.170	70,2
8	50. les Roquetes	16.050	53,8
8	51. Verdun	12.396	53,3
8	52. la Prosperitat	26.594	61,3
8	53. la Trinitat Nova	7.682	40,3
8	54. Torre Baró	2.193	54,5
8	55. Ciutat Meridiana	10.832	39,9
8	56. Vallbona	1.381	53,2
9	57. la Trinitat Vella	10.372	49,4
9	58. Baró de Viver	2.343	50,8
9	59. el Bon Pastor	13.374	63,0
9	60. Sant Andreu	55.902	78,0
9	61. la Sagrera	29.136	76,7
9	62. el Congrés i els Indians	14.063	72,9
9	63. Navas	21.758	74,8
10	64. el Camp de l'Arpa del Clot	37.957	82,3
10	65. el Clot	27.114	80,0
10	66. el Parc i la Llacuna del Poblenou	13.772	90,9

10	67. la Vila Olímpica del Poblenou	9.191	146,0
10	68. el Poblenou	32.208	89,2
10	69. Diagonal Mar i el Front Marítim del Poblenou	12.289	122,3
10	70. el Besòs i el Maresme	23.998	52,9
10	71. Provençals del Poblenou	19.732	84,3
10	72. Sant Martí de Provençals	26.178	65,0
10	73. la Verneda i la Pau	29.131	61,8
No consta		70	-

Nota: El càlcul de l'índex de l'any 2012 incorpora novetats metodològiques en disposar de noves dades per barris. A fi de permetre una comparació homogènia, s'han recalculat els valors de 2011 aplicant els nous criteris. Per exercicis anteriors aquestes noves variables no estan disponibles i per tant la comparativa pot no ser suficientment acurada.

Departament d'Estadística. Ajuntament de Barcelona.

Font: http://barcelonaeconomia.bcn.cat/, Gabinet Tècnic de Programació, Ajuntament de Barcelona.

Per a la població, Lectura del Padró Municipal d'Habitants, 30 juny 2011.

4. Rent price for commercial locals

Dte.		*Barris*	*2011*	*2010*	*2009*	*2008*
BARCELONA			9,81	10,23	11,18	12,69
1		1. el Raval	11,89	12,16	13,62	15,43
1		2. el Barri Gòtic	13,25	13,69	14,81	18,59
1		3. la Barceloneta	16,48	16,60	15,26	14,69
1		4. Sant Pere, Santa Caterina i la Ribera	12,25	12,91	13,74	15,85
2		5. el Fort Pienc	9,21	10,00	10,98	12,43
2		6. la Sagrada Família	10,27	10,86	11,97	13,09
2		7. la Dreta de l'Eixample	10,73	11,30	12,58	14,33
2		8. l'Antiga Esquerra de l'Eixample	12,09	12,18	13,15	15,26
2		9. la Nova Esquerra de l'Eixample	9,58	10,27	11,70	13,67
2		10. Sant Antoni	8,94	10,06	11,34	12,06
3		11. el Poble Sec - Parc Montjuïc	8,09	8,44	9,04	10,15
3		12. la Marina del Prat Vermell - Zona Franca	--	6,47	--	--
3		13. la Marina de Port	7,84	8,58	9,63	13,47
3		14. la Font de la Guatlla	7,64	7,71	8,42	8,56
3		15. Hostafrancs	8,31	9,51	10,18	10,49
3		16. la Bordeta	8,09	8,56	9,93	11,46
3		17. Sants – Badal	8,34	8,54	9,25	9,83
3		18. Sants	8,46	8,85	9,81	11,12
4		19. les Corts	11,53	11,12	12,41	13,54
4		20. la Maternitat i Sant Ramon	9,40	10,01	11,20	12,43
4		21. Pedralbes	--	--	13,43	--
5		22. Vallvidrera, el Tibidabo i les Planes	--	--	--	--
5		23. Sarrià	12,28	12,44	12,92	15,45
5		24. les Tres Torres	11,62	12,55	13,46	15,79
5		25. Sant Gervasi - la Bonanova	11,74	11,97	12,47	13,94
5		26. Sant Gervasi – Galvany	13,80	13,88	14,63	15,80
5		27. el Putxet i el Farró	9,47	10,65	12,61	13,48
6		28. Vallcarca i els Penitents	9,36	10,42	9,49	13,73
6		29. el Coll	7,69	6,18	7,86	--
6		30. la Salut	10,78	11,28	12,32	12,88
6		31. la Vila de Gràcia	11,15	10,94	11,35	13,07
6		32. el Camp d'en Grassot i Gràcia Nova	10,01	10,50	11,75	13,40
7		33. el Baix Guinardó	8,98	9,20	10,76	12,54
7		34. Can Baró	7,44	8,24	8,77	9,01
7		35. el Guinardó	7,78	8,55	9,39	11,59
7		36. la Font d'en Fargues	--	12,14	11,77	--
7		37. el Carmel	8,35	8,69	8,99	10,89
7		38. la Teixonera	6,10	6,46	7,92	--
7		39. Sant Genís dels Agudells	--	--	--	--
7		40. Montbau	--	--	--	--
7		41. la Vall d'Hebron	--	--	--	
7		42. la Clota	--	--	--	--
7		43. Horta	7,95	8,98	9,84	11,62
8		44. Vilapicina i la Torre Llobeta	8,22	9,53	9,68	10,02
8		45. Porta	8,71	8,80	9,28	10,39
8		46. el Turó de la Peira	8,87	8,39	7,96	10,11
8		47. Can Peguera	--	--	--	--
8		48. la Guineueta	7,66	8,41	8,74	8,69

8		49. Canyelles	--	--	--	--	
8		50. les Roquetes	7,22	7,78	7,80	10,40	
8		51. Verdun	8,64	8,81	9,90	9,35	
8		52. la Prosperitat	7,86	8,16	8,58	10,59	
8		53. la Trinitat Nova	--	--	--	--	
8		54. Torre Baró	--	--	--	--	
8		55. Ciutat Meridiana	--	--	--	--	
8		56. Vallbona	--	--	--	--	
9		57. la Trinitat Vella	5,73	8,21	8,03	9,36	
9		58. Baró de Viver	--	--	--	--	
9		59. el Bon Pastor	6,26	6,53	8,46	8,86	
9		60. Sant Andreu	8,35	8,81	10,62	11,49	
9		61. la Sagrera	7,95	8,20	9,47	10,30	
9		62. el Congrés i els Indians	8,27	8,63	9,87	11,24	
9		63. Navas	8,37	8,76	9,06	11,39	
10		64. el Camp de l'Arpa del Clot	8,90	9,35	10,30	13,06	
10		65. el Clot	8,48	8,77	9,97	10,46	
10		66. el Parc i la Llacuna del Poblenou	7,64	8,45	7,56	8,68	
10		67. la Vila Olímpica del Poblenou	9,69	9,87	11,00	13,49	
10		68. el Poblenou	9,27	9,03	10,44	11,51	
10		69. Diagonal Mar i el Front Marítim del Poblenou	11,26	11,56	11,57	14,79	
10		70. el Besòs i el Maresme	--	8,63	9,42	8,57	
10		71. Provençals del Poblenou	8,32	9,67	10,87	12,95	
10		72. Sant Martí de Provençals	9,76	9,53	9,99	10,66	
10		73. la Verneda i la Pau	8,91	9,92	9,46	10,27	

5. Foreign nationality

Dte.	Barris				
BARCELONA					
		2008	**2009**	**2010**	**2011**
1	1. el Raval	23113	24150	23718	23566
1	2. el Barri Gòtic	13476	10358	8214	7002
1	3. la Barceloneta	4706	4879	4887	4488
1	4. Sant Pere, Santa Caterina i la Ribera	8282	8570	8615	8223
2	5. el Fort Pienc	7090	7516	7312	6750
2	6. la Sagrada Família	9161	9349	9147	8878
2	7. la Dreta de l'Eixample	7784	8084	7964	7579
2	8. l'Antiga Esquerra de l'Eixample	8035	8395	8246	7822
2	9. la Nova Esquerra de l'Eixample	9618	9968	9787	9297
2	10. Sant Antoni	6942	7377	7358	7152
3	11. el Poble Sec - Parc Montjuïc	11766	11947	12084	11878
3	12. la Marina del Prat Vermell - Zona Franca	89	81	89	86
3	13. la Marina de Port	4413	4568	4444	4378
3	14. la Font de la Guatlla	1877	2001	1990	1868
3	15. Hostafrancs	3397	3605	3516	3462
3	16. la Bordeta	2631	2798	2631	2553
3	17. Sants - Badal	4138	4330	4350	4304
3	18. Sants	8273	8821	8881	7962
4	19. les Corts	5958	6345	6393	5783
4	20. la Maternitat i Sant Ramon	2648	2751	2747	2589
4	21. Pedralbes	1878	1912	1949	1827
5	22. Vallvidrera, el Tibidabo i les Planes	484	497	475	462
5	23. Sarrià	2803	2940	2891	2770
5	24. les Tres Torres	1510	1628	1513	1417
5	25. Sant Gervasi - la Bonanova	2244	2519	2402	2240
5	26. Sant Gervasi - Galvany	5484	5629	5379	4974
5	27. el Putxet i el Farró	5073	5383	5381	4653
6	28. Vallcarca i els Penitents	2168	2254	2106	1984
6	29. el Coll	996	1059	1095	1072
6	30. la Salut	1576	1640	1651	1611
6	31. la Vila de Gràcia	10591	11442	11301	9812
6	32. el Camp d'en Grassot i Gràcia Nova	4677	4742	4679	4555
7	33. el Baix Guinardó	3790	3872	3758	3609
7	34. Can Baró	1243	1272	1199	1189
7	35. el Guinardó	5047	5330	5322	5128
7	36. la Font d'en Fargues	572	645	655	584
7	37. el Carmel	4846	4880	4733	4476

	7		38. la Teixonera	1822	1911	1810	1736
	7		39. Sant Genís dels Agudells	1034	1012	911	853
	7		40. Montbau	528	541	542	589
	7		41. la Vall d'Hebron	625	623	582	554
	7		42. la Clota	76	105	93	113
	7		43. Horta	3542	3835	3875	3442
	8		44. Vilapicina i la Torre Llobeta	3501	3600	3477	3368
	8		45. Porta	3234	3433	3343	4216
	8		46. el Turó de la Peira	4792	5002	5121	3557
	8		47. Can Peguera	83	83	103	101
	8		48. la Guineueta	1115	1212	1245	1261
	8		49. Canyelles	420	368	369	353
	8		50. les Roquetes	3490	3646	3624	3497
	8		51. Verdun	2230	2253	2276	2191
	8		52. la Prosperitat	4117	4178	4152	4096
	8		53. la Trinitat Nova	1649	1672	1556	1460
	8		54. Torre Baró	227	226	205	243
	8		55. Ciutat Meridiana	4270	4291	4061	3815
	8		56. Vallbona	147	158	152	181
	9		57. la Trinitat Vella	3622	3746	3737	3514
	9		58. Baró de Viver	183	167	159	165
	9		59. el Bon Pastor	3038	3295	3298	2736
	9		60. Sant Andreu	4800	5036	4840	4511
	9		61. la Sagrera	3703	3858	3966	3880
	9		62. el Congrés i els Indians	1895	2005	1930	1976
	9		63. Navas	3110	3225	3094	3097
	10		64. el Camp de l'Arpa del Clot	6357	6382	6156	5773
	10		65. el Clot	3858	4092	4090	3815
	10		66. el Parc i la Llacuna del Poblenou	2405	2594	2773	2681
	10		67. la Vila Olímpica del Poblenou	1509	1645	1656	1562
	10		68. el Poblenou	4925	5234	5382	5202
	10		69. Diagonal Mar i el Front Marítim del Poblenou	1576	1844	1909	1944
	10		70. el Besòs i el Maresme	6615	7101	7038	6627
	10		71. Provençals del Poblenou	2373	2658	2684	2642
	10		72. Sant Martí de Provençals	2801	3005	2951	2858
	10		73. la Verneda i la Pau	3198	3289	3245	3136
			No consta	130	55	33	2

6. Foreigner residents per country of nationality

Residents estrangers. 2008 (1)Per país de nacionalitat. Províncies

	Barcelona
Font: Ministerio de Trabajo e Immigración. Observatorio Permanente de la Immigración.	
(1) A 31 de desembre.	
Romania	31.617
Itàlia	32.830
França	15.802
Alemanya	11.074
Regne Unit	8.967
Polònia	9.618
Portugal	8.383
Bulgària	5.431
Països Baixos	4.647
Bèlgica	1.916
Suècia	3.090
Lituània	647
Resta Unió Europea	8.438
Total Unió Europea (UE27)	**142.460**
Ucraïna	6.290
Rússia	4.929
Moldàvia	1.391
Suïssa	1.354
Resta Europa	2.611
Total resta Europa	**16.575**
Marroc	139.602
Gàmbia	5.660
Senegal	6.346
Algèria	3.112
Mali	2.276
Nigèria	2.530
Ghana	2.561
Guinea	1.653
Mauritània	1.286
Resta Àfrica	4.794
Total Àfrica	**169.820**
Equador	74.819
Colòmbia	31.083
Perú	34.769
Argentina	17.708
Bolívia	19.838
República Dominicana	18.048
Brasil	7.046
Uruguai	7.429
Xile	7.624
Cuba	6.745
Veneçuela	4.667
Paraguai	4.038
Hondures	1.917
Mèxic	3.150
Estats Units	2.772
Resta Amèrica	2.197
Total Amèrica	**243.850**
Xina	35.557
Paquistan	21.566
Índia	6.987
Filipines	10.247
Bangladesh	3.826
Resta Àsia	7.858

Total Àsia	**86.041**				
Total Oceania	**323**				
No consta	**1.185**				
Total	**660.254**				

Residents estrangers. 2009 (1)Per país de nacionalitat. Províncies

	Barcelona
Font: Ministerio de Trabajo e Immigración. Observatorio Permanente de la Immigración.	
(1) A 31 de desembre.	
Total Unió Europea (UE27)	**157.403**
Romania	34.311
Itàlia	36.517
França	18.133
Alemanya	12.178
Regne Unit	10.090
Polònia	9.978
Portugal	9.430
Bulgària	5.779
Països Baixos	5.197
Suècia	3.875
Bèlgica	2.132
Lituània	729
República Txeca	1.175
Resta Unió Europea	7.879
Total resta Europa	**18.570**
Ucraïna	6.702
Rússia	5.449
Moldàvia	1.571
Suïssa	1.406
Resta Europa	3.442
Total Àfrica	**181.035**
Marroc	147.722
Gàmbia	5.942
Senegal	7.109
Algèria	3.318
Mali	2.616
Nigèria	2.890
Ghana	3.034
Guinea	1.886
Mauritània	1.352
Resta Àfrica	5.166
Total Amèrica	**260.269**
Equador	77.308
Colòmbia	32.118
Perú	36.002
Bolívia	25.487
Argentina	17.944
República Dominicana	19.056
Brasil	8.120
Uruguai	7.736
Xile	8.176
Cuba	6.836
Veneçuela	5.149
Hondures	2.481
Paraguai	5.047
Mèxic	3.377
Estats Units	2.951
Resta Amèrica	2.481
Total Àsia	**95.698**
Xina	38.790
Paquistan	25.308
Índia	8.164
Filipines	10.547
Bangladesh	4.175
Geòrgia	1.722
Armènia	1.856

Resta d'Àsia	5.136				
Total Oceania	**341**				
No consta	**1.288**				
Total	**714.604**				

Residents estrangers. 2010 (1)Per país de nacionalitat. Províncies

	Barcelona
Font: Ministerio de Trabajo e Immigración. Observatorio Permanente de la Immigración.	
(1) A 31 de desembre.	
Total Unió Europea (UE27)	**178.184**
Romania	38.145
Itàlia	41.836
França	20.734
Alemanya	13.592
Regne Unit	11.450
Polònia	10.799
Portugal	10.495
Bulgària	6.455
Països Baixos	5.894
Suècia	4.690
Bèlgica	2.375
Lituània	871
República Txeca	1.375
Eslovàquia	960
Resta Unió Europea	8.513
Total resta Europa	**18.868**
Ucraïna	6.588
Rússia	5.526
Moldàvia	1.465
Suïssa	1.569
Resta Europa	3.720
Total Àfrica	**184.852**
Marroc	150.364
Gàmbia	6.110
Senegal	8.035
Algèria	3.277
Mali	2.569
Nigèria	3.260
Ghana	3.464
Guinea	1.956
Mauritània	1.337
Resta Àfrica	4.480
Total Amèrica	**246.920**
Equador	68.135
Colòmbia	29.863
Perú	35.309
Bolívia	27.094
República Dominicana	19.144
Argentina	15.713
Brasil	8.217
Xile	7.832
Uruguai	6.863
Cuba	6.672
Hondures	2.944
Veneçuela	4.940
Paraguai	5.335
Mèxic	3.371
Estats Units	2.957
Resta Amèrica	2.531
Total Àsia	**100.343**
Xina	38.632
Paquistan	29.128
Índia	8.670
Filipines	10.734
Bangladesh	4.368
Geòrgia	1.747
Armènia	1.913

Resta d'Àsia	5.151				
Total Oceania	**347**				
No consta	**236**				
Total	**729.750**				

Residents estrangers. 2011 (1)Per país de nacionalitat. Províncies					
	Barcelona				
Font: Ministerio de Empleo y Seguridad Social. Observatorio Permanente de la Immigración.					
(1) A 31 de desembre.					
Total Unió Europea (UE27)	**195.672**				
Romania	41.656				
Itàlia	45.075				
França	23.195				
Alemanya	14.921				
Regne Unit	12.927				
Portugal	11.319				
Polònia	11.087				
Bulgària	7.085				
Països Baixos	6.629				
Suècia	5.708				
Bèlgica	2.595				
Lituània	977				
República Txeca	1.510				
Eslovàquia	1.028				
Irlanda	1.720				
Resta Unió Europea	8.240				
Total resta Europa	**21.548**				
Ucraïna	7.349				
Rússia	6.507				
Moldàvia	1.732				
Suïssa	1.743				
Resta Europa	4.217				
Total Àfrica	**200.653**				
Marroc	161.360				
Gàmbia	6.745				
Senegal	9.371				
Algèria	3.619				
Mali	2.943				
Nigèria	3.852				
Ghana	4.109				
Guinea	2.235				
Mauritània	1.419				
Resta Àfrica	5.000				
Total Amèrica	**273.241**				
Equador	70.839				
Colòmbia	31.918				
Perú	36.586				
Bolívia	35.086				
República Dominicana	21.334				
Argentina	16.885				
Brasil	9.584				
Xile	8.763				
Uruguai	7.602				
Cuba	7.271				
Hondures	4.221				
Veneçuela	5.855				
Paraguai	6.956				
Mèxic	3.809				
Estats Units	3.383				
Resta Amèrica	3.149				
Total Àsia	**114.308**				
Xina	42.229				
Paquistan	34.589				
Índia	10.517				
Filipines	11.529				
Bangladesh	4.857				
Geòrgia	2.433				

Armènia	2.275				
Resta d'Àsia	5.879				
Total Oceania	**405**				
No consta	**281**				
Total	**806.108**				